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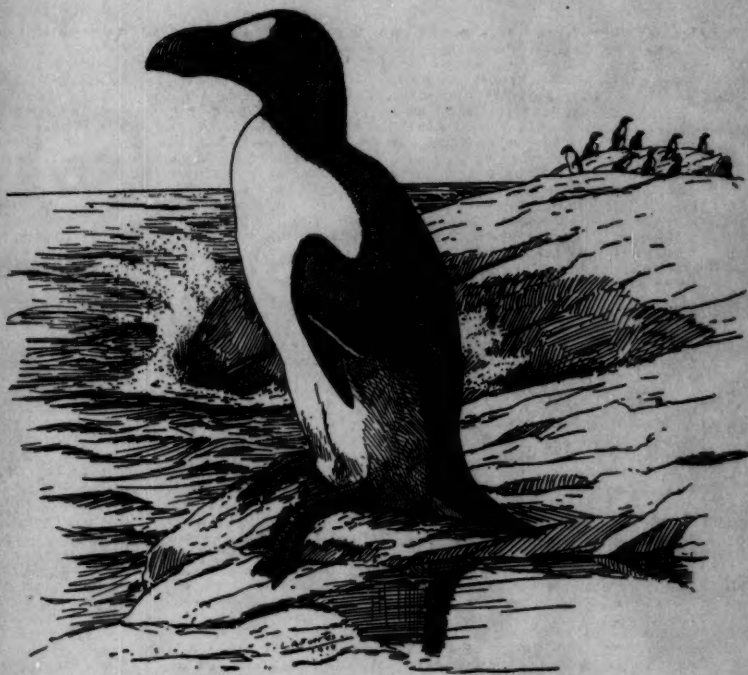
# The Auk

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HATCHING BLACK DUCKS.

UPPER: EGG AT TOP SHOWS METHOD OF PUNCTURING AND BREAKING THE SHELL,  
DUCKLING PARTLY EMERGED.  
LOWER: BILL AND HORNY KNOB AT TIP NOW VISIBLE.

# THE AUK:

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## BIRTH OF A BLACK DUCK FAMILY (*ANAS RUBRIPES* *TRISTIS*).<sup>1</sup>

BY HENRY MOUSLEY.

*Plates XVIII-XIX.*

FEW OF US I imagine have had the good fortune to be present at the birth of a Black Duck family, and no one has ever recorded the event photographically, at least, so far as I am aware.

However that may be, it certainly is one of the hardest Ducks' nests to find, as Mr. Bent<sup>2</sup> rightly says, since it nests in such a variety of situations not seeming to show a preference for any particular kind of surroundings provided it can find sufficient concealment, that one never knows where or how to look for it and can only happen upon it by chance. This was so in my case, as I unexpectedly stumbled across a nest in a small cattail swamp whilst looking for Rails. Not only was this a piece of good luck, but more extraordinary still, the luck held good for nearly a month during the incubation of the eggs, notwithstanding the obstacles that presented themselves owing to the unfavourable location of the nest. This as I have already said was in a small cattail bed, the Duck flushing from her clutch of nine eggs on May 30 of the present year, 1935. As to the exact state of the eggs of course I had nothing to guide me, except the fact that on several days previously I had certainly passed close to the nest without the Duck flushing, which possibly might indicate that this was the first day of earnest incubation, a supposition not very far short of the mark as will be seen later. Even after the Duck had left it was no easy matter to detect the nest so well was it concealed. Before proceeding further, it may be well to point out the various obstacles that precluded all thoughts of a close up study, i.e. by the erection of a blind, as the locality was in the proximity of a busy suburb of

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<sup>1</sup> Read before the American Ornithologists' Union, Toronto, Ont., October 24, 1935.

<sup>2</sup> *Life Histories of North American Wild Fowl* by A. C. Bent, 1923, Bull. 126, Smithsonian Institution, Washington.

Montreal, being bounded on three sides by railways, and on the fourth by factories and a row of houses. The small swamp itself was near the end of two very large meadows, there being a shed on the east side not more than one hundred yards from the nest, where over twenty head of cattle were milked night and morning, whilst on the west side running parallel with the swamp and also within one hundred yards of the nest, was a cinder embankment supporting a connecting loop line primarily intended for freight trains only, but which is also now being used by foot passengers and even cyclists as well. In addition, ones' movements were plainly visible from all points of the compass, and to have erected a blind or even set up a camera for any length of time under such conditions, would certainly have spelt disaster for the nest and eggs. I therefore reluctantly abandoned all ideas of photographing the Duck on her nest, contenting myself with the almost forlorn hope of eventually being able to record photographically the method adopted by the young Ducks in freeing themselves from the shell, which method has been so graphically described in words by Dr. Chas. S. Allen<sup>1</sup> in 'The Auk' for 1893, and to which Mr. A. C. Bent refers in his 'Histories of North American Wild Fowl.' On the day of discovering the nest I had no camera with me, but two days later, June 1, I visited the site again, and obtained pictures of the very well concealed nest before partially opening it up to show the eggs. Both on this, and the previous occasion, and again on June 11, when I obtained my one and only picture of the old bird flying, the Duck had always left the nest in the orthodox fashion, i.e. by an upward spring of eight or ten feet before going away on a direct flight, but henceforth as incubation advanced, she practically abandoned the spring, always sailing away low down for a considerable distance before rising, thus making photographing her almost an impossibility. Never once did she give vent to a quack or sound of any kind, and as would be natural the drake was never seen or heard, these gallants usually forsaking their partners after the laying of the eggs. My next visit was on June 6, when I obtained an excellent picture of the nest and eggs just as they appeared when the Duck left them, without any interference of the surroundings on my part, whatever. I now let five days go by before again visiting the site, on which occasion I was fortunate enough to secure the picture of the bird leaving her nest as already mentioned, as well as one of the nest and eggs, which on this occasion seemed far more noticeable and exposed than heretofore, although I had done nothing to the surroundings to make them so. Allowing still another five days to elapse, or until June 16, I was glad to find the nest and eggs looking far more compact and less visible than on my last visit, no doubt made so by a further addition of the

<sup>1</sup> The nesting of the Black Duck on Plum Island by Chas. S. Allen, 'Auk,' vol. X, 1893, pp. 53-59.



Ducks' down and other material to the nest. As incubation had now been going on for some time, I decided to open one of the eggs and make sure exactly how matters stood, and it was from the examination of the embryo that I judged it would be another week or more before the eggs would hatch. In consequence I kept away from the nest until early in the morning of the 23d, or a week since my last visit, when I luckily found the eggs still unhatched. From the opening of another of these eggs and inspection of the embryo it seemed certain the eggs might hatch at any moment, so I decided to keep in close touch with the nest visiting it at short intervals, but it was not until 12.45 p.m. the next day that the long looked for event took place, and I was more than fortunate in being there at the time, and in securing a picture of at least one egg which clearly shows, I think, the method adopted by the young Duck of freeing itself from the shell. This egg is on the left of the nest, the first picture showing the young Duck partly emerged as well as the regular punctures encircling the shell, these eventually resulting in the breaking down of one-third of it, this portion usually splitting from left to right as seen in my picture and described by Dr. Allen. The next photograph depicts the head and bill with its horny knob on tip as the duckling still further emerges, whilst the third picture shows the duckling clear of the egg and the other six—of the original nine—free also of their shells. Five other pictures represent the ducklings in the drying out stage two hours after emergence.

As already mentioned, the hatching commenced somewhere about 12.45 p.m. and I remained at the nest until 3.15 p.m., when a heavy thunderstorm prevented any further work with the camera, and forced me to beat a hasty retreat as well. During my arrival at, and departure from the nest, nothing whatever was seen of the mother Duck, but it was evident from the flattened down state of the nest and empty egg shells the next morning, that she must have returned soon after I left and brooded the young during the night until they were thoroughly dried out and stronger, and then led them away, since no trace of young or old could I find anywhere notwithstanding a most persistent search. The nest was composed entirely of dry cattail leaves with down from the breast of the mother Duck added as a lining, whilst its dimensions were as follows, viz: outside diameter fourteen, inside seven inches; outside depth six, inside three inches. The measurements of the creamy buff eggs average  $2.38 \times 1.72$  inches. If I was correct in assuming the first day of incubation to have been May 30 (the day on which I found the nest) then the incubation period of this set of eggs was 25 days. Various periods I find have been given, 25 to 27 days, and 26 to 28 days, so that I was not very far, if at all, short in my first assumption.

On hatching, the skin of the duckling appears to be of a dark reddish hue, wet and slimy and almost bare, except for the small dark hairs in their

protective coverings widely separated and which adhere to the skin. These on drying out no longer adhere to the skin but split open, allowing the tufts of down to escape from their protecting sheaths, and by so doing, convert a none too pretty nestling into a beautiful downy duckling.

4073 Tupper Street,  
Montreal, Canada.



HATCHING BLACK DUCKS.

UPPER: DUCKLING AT TOP NOW CLEAR OF SHELL, OTHER SIX (OF ORIGINAL NINE)  
ALSO FREE.

LOWER: DRYING OUT; TWO HOURS AFTER EMERGING.





## THE *VULTUR SACRA* OF WILLIAM BARTRAM.

BY FRANCIS HARPER.

THE bird described under this name by Bartram has never been satisfactorily accounted for. Recent investigation, however, has shed new light on this long-standing puzzle, and at the same time has brought forward additional evidence in support of the general soundness and authoritative quality of Bartram's records of early American natural history.

While voyaging along the St. John's River above Lake George, Florida, in 1774 or 1775, he "turned" his "observations upon the birds of this country" and described (Travels, 1791, pp. 146-152) the appearance and habits of the Florida Crane, Limpkin, White Ibis, Wood Ibis, Black Vulture, and "Painted Vulture" (*Vultur sacra*). With the exception of the last, all of these are well-known and more or less common birds of the St. John's region.

"There are two species of vultures<sup>1</sup> in these regions I think not mentioned in history: the first we shall describe is a beautiful bird, near the size of a turkey buzzard,<sup>2</sup> but his wings are much shorter, and consequently, he falls greatly below that admirable bird in sail. I shall call this bird the painted vulture. The bill is long and straight almost to the point, when it is hooked or bent suddenly down and sharp; the head and neck bare of feathers nearly down to the stomach, when the feathers begin to cover the skin, and soon become long and of a soft texture, forming a ruff or tippet, in which the bird by contracting his neck can hide that as well as his head; the bare skin on the neck appears loose and wrinkled, which is of a deep bright yellow colour, intermixed with coral red; the hinder part of the neck is nearly covered with short, stiff hair; and the skin of this part of the neck is of a dun-purple colour, gradually becoming red as it approaches the yellow of the sides and forepart. The crown of the head is red; there are lobed lappets of a redish orange colour, which lay on the base of the upper mandible. But what is singular, a large portion of the stomach hangs down on the breast of the bird, in the likeness of a sack or half wallet, and seems to be a duplicature of the craw, which is naked and of a redish flesh colour, this is partly concealed by the feathers of the breast, unless when it is loaded with food, (which is commonly, I believe, roasted reptiles) and then it appears prominent. The plumage of the bird is generally white or cream colour, except the quill-feathers of the wings and two or three rows of the coverts, which are of a beautiful dark brown; the tail which is large and white is tipped with this dark brown or black; the legs and feet of a clear

<sup>1</sup> *Vultur sacra*. (Bartram's footnote.)

<sup>2</sup> *Vultu[r] aura*. (Bartram's footnote.)

white; the eye is encircled with a gold coloured iris; the pupil black." (Bartram, Travels, 1791, pp. 150-151.)

Only one New World Vulture is known, that answers at all to this description. This is the King Vulture (*Sarcoramphus papa* (L.)), whose present range extends from Mexico into South America. The description in general, and even in certain minute details, applies remarkably well to this species, but there is a particular discrepancy in the color of the tail. In the King Vulture it is black, while Bartram has it white, tipped with dark brown or black.

"The Creeks or Muscogulges construct their royal standard of the tail feather of this bird, which is called by a name signifying the eagle's tail; this they carry with them when they go to battle, but then it is painted with a zone of red within the brown tips; and in peaceable negociations it is displayed new, clean and white, this standard is held most sacred by them on all occasions; and is constructed and ornamented with great ingenuity. These birds seldom appear but when the deserts are set on fire (which happens almost every day throughout the year, in some part or other, by the Indians, for the purpose of rousing the game, as also by the lightning:) when they are seen at a distance soaring on the wing, gathering from every quarter, and gradually approaching the burnt plains, where they alight upon the ground yet smoking with hot embers; they gather up the roasted serpents, frogs and lizards; filling their sacks with them; at this time a person may shoot them at pleasure, they not being willing to quit the feast, and indeed seeming to brave all danger." (Bartram, Travels, 1791, pp. 151-152.)

Now the Muscogulges did not inhabit the St. John's region, but Bartram encountered them principally west of the Chattahoochee River in Alabama, some months after his return from East Florida. It was doubtless in Alabama that he noticed their use of tail feathers that were "white, . . . tipped with dark brown or black." Exactly such tail feathers are borne by the Golden Eagle (*Aquila chrysaetos canadensis*) during several years while it is attaining maturity. The territory of the Muscogulges was within at least the winter range of this species, and its feathers would quite naturally have been utilized by these Indians for ceremonial purposes, as they were by some of the more western tribes. Perhaps the "new, clean and white" feathers used "in peaceable negociations" were wholly white, and thus taken from the Bald Eagle (*Haliaeetus l. leucocephalus*). In the absence of a whole specimen of either species of Eagle, and in view of language difficulties in conversing with the natives, it would not have been at all surprising for Bartram to have made the mistake of believing that these feathers belonged to his *Vultur sacra*. A point worth emphasizing here is that the Indians themselves called the feathers "by a name signifying the eagle's tail."

In another part of the 'Travels' (p. 454) Bartram mentions, among the sacred things deposited in the sanctuary of the council house in the Muscogulge town of Ottasse (or Attasse) in Alabama, "the calumet or great pipe of peace, the imperial standard, or eagle's tail, which is made of the feathers of the white eagles tail<sup>1</sup> curiously formed and displayed like an open fan on a sceptre or staff, as white and clean as possible when displayed for peace; but when for war, the feathers are painted or tinged with vermilion." Du Pratz describes (*Histoire de la Louisiane*, vol. 1, 1758, p. 105) a somewhat similar fan that the natives of Louisiana attached to their pipe of peace.

In enumerating the birds occurring from Pennsylvania to Florida, Bartram lists (*Travels*, 1791, p. 289) "*Vultur sacra*, the white tailed vulture" among those species that "are natives of Carolina and Florida, where they breed and continue the year round."

For a period of more than sixty years after the publication of the 'Travels,' there seems to have been little or no criticism or question of Bartram's record. It is true that neither Wilson nor Audubon mentioned the species in their works, apparently owing to lack of personal acquaintance with it, but meantime several other able American ornithologists devoted their attention to the bird.

Charles Lucian Bonaparte gives a brief description of "*Cathartes papa*, Ill." and adds (*Ann. Lyc. Nat. Hist. New York*, vol. 2, 1828, p. 23): "Inhabits the warmest parts of America: appears occasionally in Florida during the summer." Whether this statement was based upon Bartram's or upon some other, previously unpublished record, it would be difficult to say at this late date. A very similar statement appears in the Jardine edition of Wilson's '*American Ornithology*' (vol. 3, 1832, p. 228), on the authority of Bonaparte.

Nuttall, after quoting Vieillot's description of Bartram's "White-tailed Vulture" and repeating some of Bartram's information, says (*Man. Ornith. U. S. and Canada*, vol. 1, 1832, p. 43): "During a late journey to West Florida I made many inquiries respecting this rare bird, but could only learn, that they were occasionally seen near the sea-coast of the Gulf of Mexico." In the second edition (vol. 1, 1840, p. 42) he adds to the above: "Mr. Bartram met with it near New Smyrna, in East Florida."

Le Conte, in writing of "forgotten or lost" American animals, quotes Bartram's description of *Vultur sacra* and adds (*Proc. Acad. Nat. Sci. Philadelphia*, vol. 7, 1854, p. 11): "The tail was used by the Seminoles as a war standard. Dupratz, vol. ii, p. 109, mentions this bird under the name of White Eagle, and says that the Indians in whose neighborhood he lived, the Natchez, used the feathers for adorning their pipe of peace." In the same paper (p. 13) Le Conte pays significant tribute to Bartram as "a man

<sup>1</sup> *Vultura sacra*. (Bartram's footnote.)

of unimpeached integrity and veracity, of primeval simplicity of manners and honesty unsuited to these times."

Cassin discusses the species under the name of *Sarcoramphus sacer* (Bartram) and remarks (Birds Calif., Texas, etc., 1853, p. 60): "The identification of the bird here described, may be considered as one of the most important services to be performed in North America O[r]nithology. Its occurrence has never been noticed since the time of the accurate and voracious naturalist who first described it, and his careful description above quoted seems to clearly indicate it to be a species entirely unknown. The white tail especially is characteristic, and establishes a clear distinction from any other known species. It is related evidently to the King Vulture, (*S. papa*,) but that species has a black tail, and in case of mistake or misprint in Bartram's description, it may be presumed at any rate to relate to an occurrence of that species within the United States. There is no more inviting nor more singular problem in North American Ornithology."

Several years later Cassin returned (in Baird, Cassin, and Lawrence, Pacific Railroad Repts., vol. 9, 1858, p. 6) to the subject that so interested him: "The sacred vulture of Bartram, *Sarcoramphus sacer*, . . . has not been observed or identified anywhere since his time. This has tended to throw a doubt on its existence, but recent information renders it probable that this, or at least a species different from the vultures just described, is found about Lake Okechobee, in Southern Florida, where it is called king buzzard."

If J. A. Allen is the most critical (and lengthy) commentator on Bartram's bird, it may be well to bear in mind Coues's characterization (Osprey, vol. 3, 1899, p. 128) of the learned and highly esteemed (then) editor of 'The Auk' as "the mildest-mannered man who ever cut an author's throat or scuttled a book." Certainly in my own slight contacts with Dr. Allen during the last fifteen years of his life, the outstanding impression I received was of a very quiet and shy scholar, wholly and unselfishly devoted to the advancement of zoological science. Yet it is evident that in 1871 he could hardly have had a proper appreciation of Bartram, else he would not have dealt with him in so severe a mood.

Allen refers at the outset (Bull. Mus. Comp. Zool., vol. 2, 1871, p. 313) to "The Painted or Sacred Vulture ('*Vultur sacra*'), an apocryphal species described by Bartram." He then quotes Bartram's description and Cassin's subsequent comments, and continues (pp. 315-316):

"Although the description . . . accords more nearly with the *Sarcoramphus papa* than with any other known species, I cannot avoid the conclusion that it is in the main a *purely mythical species*, notwithstanding the high reputation for veracity generally accorded to Mr. Bartram. I mainly so regard it for the reason that Florida has of late been too often traversed



by naturalists, and especially all the parts visited by Bartram, for a bird of so striking an appearance, and so numerous as Bartram represented his *V. sacra* to be, to remain undiscovered if such a species exists there. While it nearly accords with the *S. papa* in size and general color, it is most radically different from this species, in the color of the tail, and in having a 'large portion of the stomach hanging down on the breast, in the likeness of a sack or half-wallet.' In the latter feature it is structurally widely different from any known American bird. . . . As to the feathers of its tail being used by the Creek Indians for a royal standard, and to which feathers they give a 'name signifying an eagle's tail,' it seems to me more probable that they were really feathers of the white-headed eagle (*Haliaeetus leucocephalus*), since it is well known that the tail feathers of that bird are very generally used for this and similar purposes by the Indian tribes of this continent, whereas the tail feathers of so foul a bird as the vulture must in all probability be too ill scented to suit even the unfastidious taste of an Indian. . .

"On the whole, it seems evident that Bartram's account . . . is a confused mixture either of pure fiction and truth, with the former largely in preponderance, or of the characters of several different species. The description would seem to have been mainly drawn from an example of *Sarcorhamphus papa* that he may have somewhere met with, but with which he combined certain features of this or other species which he had observed only at a distance, and that he thus misjudged their exact character (as in respect to the strange external food-pouch) or else added them solely on popular, fabulous rumors. The flights of these birds, which he observed assembling over recently burned districts, I think must refer to the *Polyborus tharus*, which is well known to have this habit, while the tail feathers he speaks of as used by the Indians in their councils were more probably either those of the *Haliaeetus leucocephalus* or *Polyborus tharus* than of any species of vulture, since a white-tailed American vulture, I believe, is a bird thus far unknown. If the '*V. sacra*,' then, is to be regarded as anything else than a myth, it should in all probability be identified with the *S. papa*, as already stated, and as was done by Bonaparte in his *Conspectus*."

Sharpe says (Cat. Birds Brit. Mus., vol. 1, 1874, p. 22) of *Cathartes sacer*: "This species, not met with since Bartram's time, still remains undiscovered. It is closely allied to *C. papa*, from which it appears to differ chiefly in its white tail."

Coues, in an extensive discussion and commendation of Bartram's ornithological work, says (Proc. Acad. Nat. Sci. Philadelphia, vol. 27, 1875, p. 344) of his *Vultur sacra*: "Undetermined. This is Bartram's particular puzzle; it is elaborately, but not recognizably described, at p. 150." Maynard suggests (Birds E. N. America, 1881, p. 327) that the bird Bartram saw was the Caracara (*Polyborus*).

Then after many years, during which this bird had all but sunk into oblivion as a former inhabitant of the United States, my good friend Arthur H. Howell joined the ranks of Bartram's critics in referring (Florida Bird Life, 1932, p. 8) to "his famous 'painted vulture,' *Vultur sacra*, an apparently mythical species having some of the characters of the King Vulture of South America (*Gypagus papa*). . . . No such bird has been seen by later observers, and we are forced to the conclusion that Bartram in this case drew on his imagination or repeated some tale related to him by others."

Now Bartram's honesty is unimpeachable, and the time has rather definitely passed when his natural history observations can be seriously challenged (cf. Small, Jour. N. Y. Bot. Garden, vol. 32, 1931, pp. 155-161; Harper, Sci. Monthly, vol. 31, 1930, pp. 52-57). It is true that his chronology is extremely confused, and that his routes and distances are often vaguely described, but his failings in these respects do not affect the soundness of his contributions to American natural history. Dr. Allen should have known that it was not Bartram's habit to indulge in "pure fiction." There is apparently no record of Bartram's having preserved any bird specimens on his southern trip, and his descriptions were probably written in part from memory. However that may be, it can not be reasonably doubted that he observed in Florida either the King Vulture or some closely similar species.

There are such a number of parallel cases of discontinuous distribution, particularly among raptorial birds, that there would be nothing very surprising in the former occurrence of the King Vulture in Florida. As examples of such distribution, mention may be made of *Jabiru mycteria* (in the Pleistocene), *Gymnogyps californianus* (Pleistocene), *Teratornis merriami* (Pleistocene), *Rostrhamus sociabilis plumbeus*, *Buteo brachyurus*, *Polyborus cheriway auduboni*, *Speotyto cunicularia floridana*, *Aramus p. pictus*, *Aramides cajanea* (Pleistocene), and *Aphelocoma coerulescens*. All of these Florida birds are widely separated geographically from their representatives in western North America, Central America, or South America—representatives that are either completely identical with, or else closely related to, the Florida forms. At some former period the eastern and the western representatives doubtless had a continuous distribution, and the absence of a considerable proportion of the above-mentioned species from the present West Indian avifauna suggests the northern shores of the Gulf of Mexico as the territory once connecting their now disjointed ranges. As Wetmore has pointed out (Smithsonian Rept. 1928, p. 386), various forms now considered subtropical ranged as far north as Nebraska under the mild and fairly uniform conditions of the Pliocene. Subsequent cooling of the climate apparently forced such birds southward into Florida and

Mexico and in some cases, at least, disconnected the eastern and the western portions of their ranges by driving them entirely out of the Mississippi Basin.

Although Bartram's statement that he considered his bird "not mentioned in history" is ample evidence that he derived no part of his account from published sources, it may be of interest at this point to review and compare some accounts of the King Vulture by his predecessors. Perhaps the earliest reference is by Hernandez (*Nova Plantarum, Animalium et Mineralium Mexicanorum Historia*, 1651, p. 319), who recognizably describes the bird under the name of "Cozcaquauhlti" or "Regina Aurarum." According to him, the legs are red ("crura rubra") and the iris is yellow ("Iris fulva").

Albin describes (*Nat. Hist. Birds*, vol. 2, 1738, p. 4, pl. 4) the "Warwovwen, or Indian Vulture" (also referred to as "King of the Vultures"), which he had seen in captivity at Charing-Cross in England. It was supposedly of East Indian origin, but corresponds in most details to *Sarcoromphus papa* and may be safely identified with that species. "The Crow was of a flesh Colour, and bare of Feathers hanging down like a Bag on the Breast. . . . The Tail was composed of twelve white Feathers tipt almost half way with black. The Legs and Feet were of a yellowish flesh Colour." The accompanying plate agrees in all these details. The basal part of the tail is white, squarely cut off from the black tip; perhaps Albin was led into this error by the white under tail-coverts. If this drawing is admittedly none too accurate, the same may be said of his other plates, of more common birds.

Bartram was a correspondent of George Edwards and supplied him with a considerable number of specimens and accounts of American birds as material for the latter's 'Gleanings of Natural History' (3 vols., 1758, 1760, 1764). The colored plates of the Marsh Hawk and the White-throated Sparrow in this work were engraved from Bartram's own very creditable drawings of these species. A letter from Edwards to Bartram, mentioning a presentation copy of the second volume, is published by Darlington (*Memorials of Bartram and Marshall*, 1849, pp. 419-420). There is no mention of the King Vulture in this work, and Bartram—at least up to the time of the publication of his 'Travels' in 1791—must have been unfamiliar with Edwards's earlier 'Natural History of Uncommon Birds,' for the species is described and illustrated there (vol. 1, 1743, p. 2, pl. 2). The original material was a live specimen in Sir Hans Sloane's collection. Though informed that it had been brought from the East Indies, Edwards believed that it was of West Indian origin. He comments on the fact that Albin makes the tail black only at the end, and further states that he "could discover no such Crow of bare Skin, as Albin has figured." (Prob-

ably Albin's bird had just had a meal, while Edwards's bird had not. In some study skins the bare breast is largely concealed by feathers overlapping from the sides.) Both text and plate in Edwards show that "the Legs and Feet are of a dirty, white Colour"; this is certainly in close agreement with Bartram. The iris is white. Edwards's quotation (p. xx) from Navarette (in Churchill's 'Collection of Voyages,' vol. 1, p. 46) is in great contrast to Dr. Allen's assumption as to the repulsive nature of the species: "But the gayest and finest bird I have seen, is the *King of the Copilotes*, which I saw several times in the Port of *Acapulco*, and never had enough of looking at him, still more and more admiring his Beauty, Stateliness and Grace."

Du Pratz, in writing on the natural history of Louisiana, fell far short of attaining Bartram's standards of accuracy. In fact, Coues remarks (Birds Colorado Valley, Bibliog. Appendix, 1878, p. 582): "The matter is very wild, and of no account." It is extremely interesting, however, to find Du Pratz introducing (*Histoire de la Louisiane*, vol. 2, 1758, p. 109) an avian species bearing a certain resemblance to Bartram's and also possessing plumes that were prized by the Indians for ceremonial purposes. A translation of his account follows:

"The eagle, king of birds, is smaller than the eagle of the Alps; but it is a much finer bird, being almost entirely white, and having only the extremity of its quills black. As it is rather rare, that is a second reason for making it prized among the natives, who pay a high price for the wing quills as an adornment of the symbol of peace. This is the fan of which I spoke in describing the pipe of peace."

Much of the foregoing matter was already in manuscript, when some highly important and significant documents, apparently never examined previously by an American zoologist, became available. These are two volumes of Bartram manuscripts, the originals of which form one of the treasures of the library of the British Museum Herbarium. Through the courtesy of Dr. Herbert Smith, the Librarian of that department, and of Mr. Julian P. Boyd, the Librarian of the Historical Society of Pennsylvania, I have been privileged to examine photostat copies. The manuscripts are in the nature of reports by William Bartram to his patron in London, Dr. John Fothergill, and cover approximately the first two years of his travels (1773 and 1774). They are perhaps abbreviated transcripts of field journals that Bartram must have kept, but of which no trace seems now discoverable. While there is no definite indication as to when they were prepared or dispatched, I consider that a likely date is the spring of 1775, when Bartram had returned to Charleston, S. C., after a long absence in Florida, during which he had been more or less out of contact with his friends and had even been given up for lost. The Historical Society of Pennsylvania possesses



two letters written by Bartram from Charleston at this period: one of March 27, 1775, to his father, and one of April 20, 1775, to Dr. Fothergill.

The particular significance of the present manuscripts is that they are doubtless far fresher documents than the published 'Travels,' which did not appear till 1791, and by the same token they are probably much more authoritative than the book in the considerable number of details wherein they differ from the latter.<sup>1</sup> Arrangements for the publication of the manuscripts are in progress. Meanwhile the following paragraph from volume 2, page 49, is of immediate interest. It appears in an account of the birds of East Florida, among which three "eagles," ten hawks, and three vultures receive the major share of attention.

"The Cropped Vulture. This is a very beautiful bird, not quite so large as the Turkey buzzard, they are chiefly white the back & wings of a deep nut brown, the Bill yellow Legs white, the head & part of the neck bare of feathers covered with a naked skin of a vermillion colour, what is remarkable in the Bird their craw or stomach hangs like a pouch or purse bearing outside on the breast & bare of feathers. When the vast meadows and Savanahs of Florida are set on fire, they gather in flocks to the new burnt ground where they feed on the roasted snake frogs Lizards Turapins and other reptiles, where I had an opportunity of getting one."

There are two outstanding points in this paragraph. First, there is no longer any question as to whether Bartram had a specimen in hand, and this utterly disposes of any further possibility of referring to his bird as a "mythical species." Secondly, this scant description, as far as it goes, agrees somewhat better with the King Vulture than does the one in the 'Travels.' At least there is no mention of a white tail—the feature that has hitherto proved the greatest stumbling-block in the identification of the bird. As the most likely explanation of this point, I would suggest that Bartram failed while in the field to make a note of the color of the tail, and years later, when preparing his book, he may have unfortunately attempted to fill in details from memory. It is also possible that his memory of the tail resulted in part from his impression of a soaring bird, whose white under tail-coverts might have been mistaken for a white basal portion of the rectrices. At the probable date of the present manuscript (spring of 1775) he had not yet journeyed to Alabama, where, in all likelihood, he eventually observed the ceremonial use of the white tail feathers of one or two species of eagles among the Muscogulges, and confused them with the plumage of

<sup>1</sup> In this connection the following remarks of Dr. William Baldwin, in a letter of July 3, 1817, to Dr. William Darlington, are illuminating: "He [William Bartram] informed me, in 1812, that these Travels had not been published under his own inspection; but that he had by him all his original manuscripts, from which a more correct work might be compiled:—that it had always been his intention to publish a correct edition,—but had neglected it until old age prevented." (Darlington, *Reliquiae Baldwinianae*, 1843, p. 235.)

his "Painted," "White-tailed," or "Cropped Vulture." Unfortunately this species is not represented among Bartram's colored drawings of animals and plants now in the British Museum Herbarium, as I am informed by my friend David A. Bannerman.

It is also perfectly clear from the paragraph quoted above—if not indeed from the account in the 'Travels'—that it was the *craw* or *crop*, and not the true stomach or gizzard, that Bartram referred to as hanging down on the breast. This point should never have been so difficult as it appears to have been for Dr. Allen. He should not have expected too much exactness in anatomical nomenclature or description from one who was primarily a botanist! The fact of a full crop bulging out in front of the breast in raptorial, gallinaceous, and various other birds is too well known to require comment. One is inclined to suspect that Dr. Allen had no specimen of the King Vulture before him as he wrote. Bartram's description of the "*craw*" is remarkably similar to Albin's, and actually tends strongly to fix the identity of his bird as the King Vulture. In two adult male specimens in the Academy of Natural Sciences of Philadelphia (Nos. 75152-75153), collected by Wharton Huber and J. Fletcher Street at Eden, Nicaragua, the bare skin of the breast (now brownish yellow, and bulging slightly even in these dried specimens) gives every suggestion of having been distended by the crop at each good feast the birds attended. The labels bear the following color notes: "Iris cream white. Legs and feet slaty black."

Bartram's statement of the size of his bird fits the King Vulture thoroughly. (According to Swann, *Mon. Birds Prey*, 1924, pp. 6, 15, *Sarcoramphus papa* is 27 inches in length, with a wing of 494-500 mm. and a tail of 253 mm., while *Cathartes aura septentrionalis* is 29 inches in length, with a wing of 510-540 mm. and a tail of 270-285 mm.) His description of the sculpture and coloration of the bill and head applies remarkably well to the King Vulture, and to no other known species. As to the legs and feet, neither Albin nor Edwards ascribed to captive birds the same blackish color that some recent authors do. It is of interest here to recall that it was on the accounts of Albin and Edwards that Linnaeus based (*Syst. Nat.*, 10th ed., vol. 1, 1758, p. 86) the first valid binomial name of the species—*Vultur papa*. Later, following Brisson (*Ornith.*, vol. 1, 1760, p. 470), Linnaeus describes (*Syst. Nat.*, 12th ed., vol. 1, 1766, p. 122) the feet as red ("*Pedes rubri*")! Tschudi (*Fauna Peruana*, *Ornith.*, 1846, p. 69) says, "*Die Füße weisslich*." According to Swann (*loc. cit.*, p. 6), the adults have "greyish-black" feet. In a discussion of this point with me, M. A. Carriker, Jr., has suggested that the legs of vultures have a whitish bloom that is easily rubbed off after death. This would account for some of the varying colors ascribed to them by different authors, and substantiate Bartram's statement.

Bartram's "gold coloured iris" is within the range of variation of the colors ascribed by other authors, from "white" or "cream white" to "yellow" or even "lebhaft rostgelb" (Tschudi, loc. cit., p. 69).

Dr. Allen's suggestion of confusion with the Caracara (*Polyborus*) is quite invalid, since Bartram's description as a whole could not possibly apply to that species. In 1774, as to-day, the Caracara may have been scarce or absent in those parts of Florida visited by Bartram; and this might explain his failure to include the species in his list of birds. Apparently Dr. Allen himself failed to meet with the Caracara in 1868-69 during his investigations along the St. John's as far south as Enterprise, Volusia County.

Altogether, the conclusion seems inescapable that Bartram actually met with his "*Vultur sacra*" in Florida; and further, that his description, save for a few fairly minor and explainable discrepancies, applies very satisfactorily to *Sarcoramphus papa* (L.). Therefore, as a matter of belated justice to our worthy eighteenth-century naturalist, I suggest that the King Vulture be recorded henceforth among the birds now extinct in the United States, but as having been observed *and collected* (though probably not preserved) by Bartram along the St. John's River in 1774 or 1775. It seems well within the bounds of possibility that Wetmore or some other paleontologist may yet have occasion to report the discovery of osseous fragments of the species from either the Pleistocene or the Recent deposits of Florida.

Within its present range from Mexico to South America the King Vulture is "rare in most localities" (Swann, Mon. Birds Prey, 1924, p. 6), and extinction of a former small, isolated population of this species in Florida, at the extreme periphery of its range, is practically as comprehensible as the similar disappearance of the several Pleistocene species mentioned on a preceding page. In speculating on the cause of its extinction here, one finds a possible correlation in the case of the royal palm (*Roystonea regia*), which Bartram discovered along the St. John's in the same general region as his *Vultur sacra* (Travels, 1791, pp. 115-116). Its natural range in Florida is now restricted to the extreme southern portion, in Dade, Monroe, and Collier Counties. The northern colony described by Bartram "may have been destroyed by the severe frosts of 1835" (Cooper, Ann. Rept. Smithsonian Inst. 1860 (1861), p. 440). According to Small (Jour. N. Y. Bot. Garden, vol. 29, 1928, p. 8), "All this evidence . . . indicates . . . that up to about a century ago Florida had a protracted warmer and perhaps less changeable climate, [and] that the sporadic occurrence of tropical and semitropical plants in the more northern part of the peninsula represents the remains of a generous distribution of more typically southern plants further north."

Antonius reports (Zoologischer Garten, vol. 6, 1933, p. 110) concerning King Vultures in the Schönbrunn Zoo that their talons are much more sensitive to frost than those of any Old World Vulture, and that one bird thus lost all its toes. The foregoing suggests that climatic changes, as indicated by the results of the severe "freezes" of 1835 and other years, may have been responsible for the disappearance of the King Vulture from Florida, as they probably were for the destruction of the royal palms along the St. John's.

*Swarthmore, Pa.*



THE HAWK MIGRATIONS AT CAPE MAY POINT,  
NEW JERSEY.

BY ROBERT P. ALLEN AND ROGER T. PETERSON.

*Physical Features.*—The village of Cape May Point, at the southernmost tip of the Cape May peninsula, New Jersey, lies at the very junction of Delaware Bay and the Atlantic Ocean. The peninsula itself, a protruding finger of land less than ten miles in average width, separates the waters of the bay from the ocean for a distance of some eighteen miles. The country immediately to the north of this peninsula is readily likened to a triangle, with the ocean as one boundary and the broad bay and river mouth as the other. This triangle may be compared further to a giant funnel, the mouth of the funnel being the Cape May peninsula.

From the southwest tip of the peninsula one may take a compass bearing on due north, and, moving off to the west and south, reach due east without sighting land, except perhaps at one distant point, if the visibility is good. That one point is a high line of dunes in the vicinity of Cape Henlopen, Delaware, slightly less than thirteen miles distant. Thus the three quadrants from north to west, west to south and south to east are open water within a circle thirteen miles in radius from Cape May Point. Furthermore, the quadrant south to east faces the open Atlantic, a fact of distinct importance in relation to bird movements.

The vicinity of Cape May Point consists of flat coastal plain, with narrow sand beaches bordering both ocean and bay, and low dunes lining the bay side for several miles. Northward from the Point the bay side is lined with salt marsh, intersected by frequent tidal creeks. The sand dunes near the Point, while seldom large, continue to occur well in from the bay where they lose their identity as small hills covered with vegetation.

The plant life has a decided Carolinian flavor, the dominant tree growth being Spanish oak and pine with holly and prickly pear (*Opuntia*) generally distributed. Bayberry and beach plum are also typical. Directly north of the village, and lying close to the bay, is a grove of Spanish oaks, with post oaks, pond pines, red cedars, holly and a profusion of other plant life represented to a lesser degree. This entire Cape May Point woods covers an area less than one quarter mile square.

There are no springs in the Point woods, but fresh water is found nearby in Lake Lily and Lighthouse Pond immediately adjacent, and in Pond Creek to the north.

*The Flights.*—From late August until the middle of November there occurs at Cape May Point a series of migratory flights of outstanding interest; especially because of the large numbers of birds concerned both



as to species and individuals. During the 1935 season, the Audubon Association warden, Mr. William Rusling, recorded 188 species and estimated a total of 124,000 individuals, either passing through or found within the vicinity of the Point (August 4 to November 16). This total estimate of individuals is probably far under the actual figure as the observer was concentrating on the raptorial species. The raptors were represented by thirteen species, slightly more than 10% of the total number of individuals of all species recorded, or approximately 13,500 birds. This estimate is fairly accurate; that of the passerine birds, probably only a fraction of the number that actually passed through.

Detailed records of the Hawk flights were kept in 1931, 1932 and 1935 by representatives of the Audubon Association<sup>1</sup> engaged primarily in furthering law enforcement during the flights. A comparison of these records indicates that the Sharp-shinned Hawk (*Accipiter velox*) is the most abundant raptor, with immature birds of the species predominant. Table I shows the relative abundance of this and other raptorial species.

TABLE NO. 1.

Species In order of abundance in 1935 at Cape May Point	Abundance		
	1935	1932	1931
1. Sharp-shinned Hawk.....	8,206	5,765	10,000
2. Cooper's Hawk.....	840	1,222	500
3. Sparrow Hawk.....	777	322	200
4. Osprey.....	706	102	common
5. Pigeon Hawk.....	402	1,707	1,200
6. Broad-winged Hawk.....	367	400	2,000
7. Marsh Hawk.....	274	264	100
8. Bald Eagle.....	60	10	40
9. Duck Hawk.....	56	42	20
10. Red-tailed Hawk.....	50	177	
11. Red-shouldered Hawk.....	12	600	
12. Rough-legged Hawk.....	2		
Unidentified Buteos.....	22		
Total.....	11,774	10,611	14,060
13. Turkey Vulture.....	1,678		
Total.....	13,452		

Other migrating birds that particularly characterize the Cape May flights because of their great numbers, include the Black-crowned Night Heron, Woodcock, Flicker, Kingbird, Tree Swallow, Barn Swallow, Robin, Cedar Waxwing, Bobolink, and Red-wing.

<sup>1</sup> Geo. B. Saunders, 1931; Robt. P. Allen, 1932; Roger T. Peterson and William J. Rusling, 1935.

The flights are often very spectacular. On a favorable morning the Point woods may be literally alive with migrants. Over the meadows to the north animated clouds of Swallows, sometimes in thousands, move gradually towards the tip of the peninsula; or species after species pass overhead, flying very high on a southerly course or *northward* at a low altitude. Eagles, Vultures and Buteos circle on soaring wings, gaining altitude. Woodcock spring up on every hand, whirring away in all directions and disappearing into the thickets. One hears the call notes of Warblers, Sparrows, Black-birds and Flickers. Rails sometimes crowd the nearby marshes, and when disturbed add their protesting tones.

Even dragonflies and monarch butterflies join the migrating hosts on occasion, and when vast numbers of the latter reach the Point, the Spanish oaks, are sometimes more orange than green, and constitute a local feature to which the natives point with pride.

The woods area offers natural foods and abundant cover and it is here that the principal concentrations of migrant birds are observed. Barn Owls, occurring in flocks that may number upwards of one hundred birds, prefer a grove of half-grown pines in the vicinity.

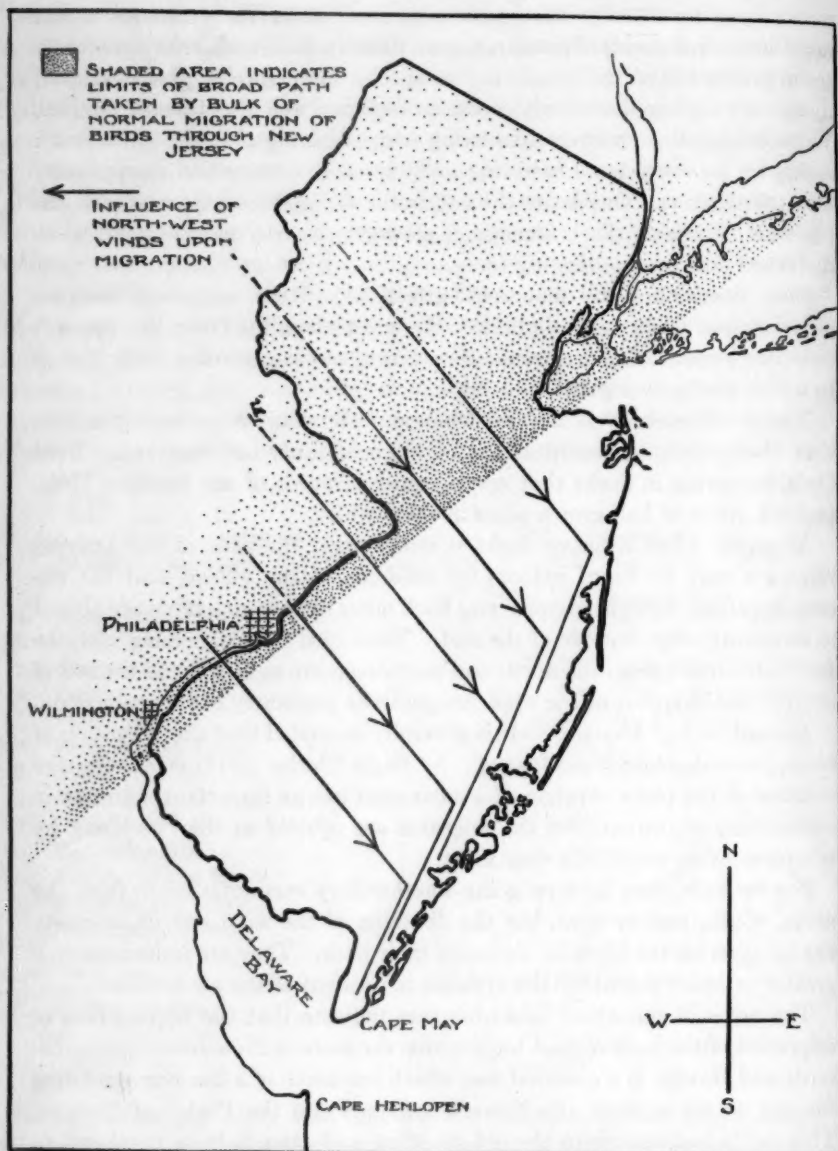
At night, when a heavy flight is under way, the calls of the arriving migrants may be heard indoors by residents of the village, and the uncertain calling of Night Herons, and flock notes of passerine birds are almost as incessant as the rumble of the surf. These bird sounds, coming with the first cold drafts from the north and northwest, are as stirring as the roll of drums, and eloquent of the whole magnificent pageantry of bird migration.

*Normal Path of Migrants.*—It is generally conceded that the migration of birds proceeds regardless of wind. As Eagle Clarke (1912) concludes, the weather at the place of origin of a movement has an important influence in stimulating migration, but the migrants are *affected* as they go along by whatever other conditions they meet.

For example, they keep on going whether they encounter winds from the north, south, east or west, but the direction of the wind and its intensity has its *effect* on the birds by *deflecting* their path. They are influenced to a greater or lesser extent by the cyclonic movement of the air bodies.

The notes of numerous field observers indicate that the normal lane of migration of the bulk of land birds across the state of New Jersey, passerine birds and Hawks, is a diagonal one, which lies north of a line corresponding roughly to the edge of the Newark lowlands and the Piedmont Plateau. This seems to conform to the old coastline and extends from northeast to southwest.

Cutting across the upper corner of the state are the Appalachian ridges which extend in the same diagonal direction and down which many of the Hawks, especially the Buteos and the Accipiters, normally pass.



As any bird student who has worked the area knows, the Pine Barrens and much of the rest of the present coastal plain are rather poor for land birds, other than the breeding species, much of the time during migration.

*Effect of Wind on Migrants.*—The concentrations of a variety of migrants at Cape May seem to be very largely the result of a wind condition—a northwest wind blowing across the lane of travel. The birds lose ground against this wind and gradually slip into the southern New Jersey peninsula. These birds eventually jam into the narrow confines of Cape May Point. A north wind will bring birds, and even a north-northeast wind will bring a few, but a northwest wind almost invariably brings a great many more.

The importance of the degree of wind force is illustrated by the observation that clear skies and light northwest winds bring only moderate flights while a northwest wind of fairly strong, or strong force is almost certain to be accompanied by a large influx of migrant Hawks besides many smaller land birds.

*Arrival of Migrants at Point.*—The Hawks arrive rather high, are confronted by the broad waters of Delaware Bay and the smaller species, the Accipiters and the Falcons, that fly with much beating of the wings, drop to a lower level near the lighthouse.

The lighthouse is not at the tip of Cape May Point and is set back a bit from the edge of the ocean. It is in this general neighborhood that the Hawks seem to arrive.

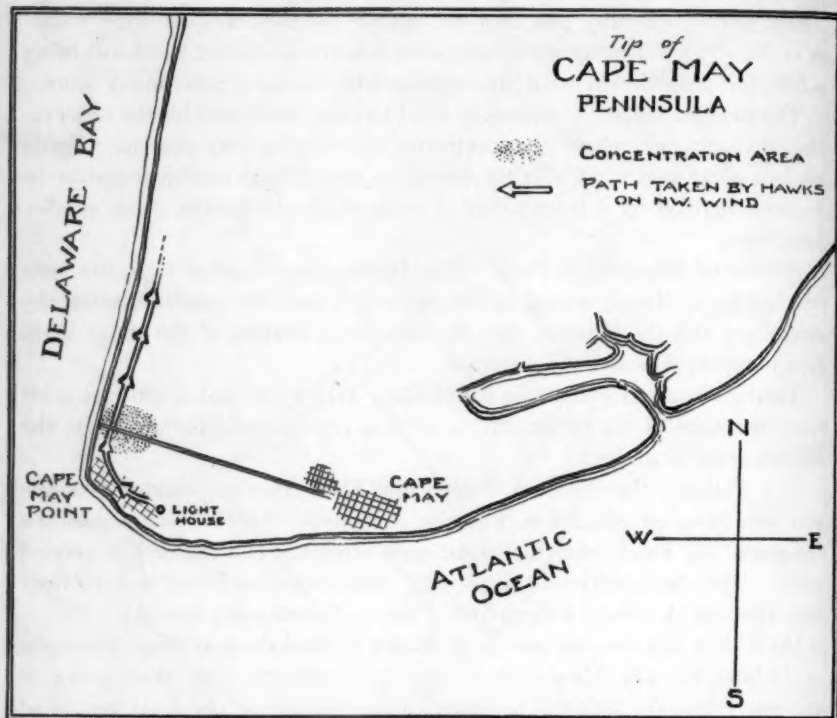
The Falcons, the Sparrow, Pigeon and Duck Hawks, wander over the salt meadows on migration, but the Accipiters, the Sharp-shin and the Cooper's, shy away from the broad open stretches and follow the wooded areas. They both arrive in this vicinity, circle down, and start beating their way through the town of Cape May Point and *north* along the bay.

On a clear day one can see the tremendous sand dune at Cape Henlopen in Delaware. The Hawks then, can see Delaware from their point of vantage in the sky, but will not attempt the crossing on the northwest wind that has forced them to Cape May. It is a long flight and if they lost too much ground against the wind they would be taken out to sea. It would be a long fight into the wind to regain the shore in Delaware.

*Northward Flight into Northwest Wind.*—On a northwest wind the Kingbirds and Flickers, as well as the Warblers and Thrushes that arrive at the Point at dawn, all follow the bay shore line northward. Even the monarch butterflies and the dragonflies have a tendency to go in that direction. In the early hours of the morning small birds that had overcast the mark and gone out to sea in the dark can sometimes be seen winging their way in from the open ocean against the wind. These waifs join the general movement of the other migrants.

This narrow path up the shore takes the Hawks low over the wooded

section just north of the town of Cape May Point. A concrete highway running almost east to west cuts across the woodland and here the local gunners formerly lined the road and waited for the Hawks to come over. Until recently shooting was permitted from the highways in New Jersey so the slaughter of Sharp-shins, an unprotected species, was considerable. As the road through the woods commands a considerable vista of open sky



it is the best vantage point from which to check the numbers and the actions of passing Hawks.

Shooting from sandhills in the woods has been largely eliminated through the creation of the Witmer Stone Wildlife Sanctuary by the Audubon Association. This embraces much of the woodland where the concentrations occur.

The northward flight continues as long as the northwest wind persists. If the wind is very strong the birds sometimes find difficulty in tacking back and forth against it. We have followed the birds for seventeen miles north along Delaware Bay. It is to be supposed that they continue on until they reach a point where the river is narrow enough for them to cross. When a



salt water creek, with broad marshes, intersects the lane of travel, the Sparrow Hawks cross without hesitation. The Sharp-shins follow the edges of the woods until the creek narrows. For this reason the lane of travel becomes diffused and difficult to follow farther north.

A careful search on the Delaware side revealed no concentrated crossing point, although Mr. Richard H. Pough of Philadelphia has seen considerable numbers of birds cross in the neighborhood of Wilmington.

*"Follow-up" Flight.*—Often for a day or so after the wind has lulled or shifted into another quarter, fair numbers of Hawks will drift through. These birds, instead of swinging north along the shore, will attempt to fly south across the bay from the tip of Cape May Point. We believe these to be birds that had been brought onto the coastal plain by the wind of the day before, but that had not reached Cape May by nightfall. However, we cannot be certain of this.

The Sharp-shins often fly very high when crossing, usually from five hundred feet to the limit of vision. It is a neck-breaking and eye-blinding job to obtain an accurate count. Although they seem to head in the direction of Cape Henlopen, Delaware, there is no corresponding concentration on the other side. Neither the lookout men at the coast guard station or the wireless station had noticed any unusual numbers of Hawks. It is probable that the birds are still flying very high when they reach Delaware and spread out over the country-side before dropping down.

*Lulls.*—For a day or so after the "follow-up" flight there will be scarcely a Hawk. This scarcity might last several days. Small land migrants are also largely absent, and seem to evaporate into thin air on days when the wind is in a southerly or easterly quarter. Dr. Witmer Stone tells of working the woodlands along the bay for five miles during one of these lulls. He recorded only ten species of birds. That night a northwester set in. The following day, over the same ground he listed eighty-three species.

TABLE NO. 2.

Relation of wind direction to the numbers of the Sharp-shinned Hawk (*Accipiter velox velox*) at Cape May Point during the fall of 1935.

Date	Prevailing Wind	Numbers of Sharp-shins	Direction of Flight After Reaching Point
Sept. 16.....	N	803	N along Bay
17.....	NW	281	N along Bay
18.....	SW	5	
19.....	S	3	
20.....	NW	228	N along Bay
21.....	S	340	S across Bay
22.....	NNW	325	N along Bay
23.....	NNW	566	N along Bay
24.....	E	52	S across Bay

TABLE NO. 2 (Continued).

	<i>Date</i>	<i>Prevailing Wind</i>	<i>Numbers of Sharp-shins</i>	<i>Direction of Flight After Reaching Point</i>
Sept.	25.....	SW	1	
	26.....	SW	0	
	27.....	S	7	
	28.....	E	1	
	29.....	W	11	
	30.....	NW	168	N along Bay
Oct.	1.....	S	591	S across Bay
	2.....	NW	251	N along Bay
	3.....	S	295	S across Bay
	4.....	NW	531	N along Bay
	5.....	NE	79	N along Bay
	6.....	Rain	12	
	7.....	NW	242	N along Bay
	8.....	N	63	N along Bay
	9.....	ENE	49	S across Bay
	10.....	E	47	S across Bay
	11.....	SW	30	S across Bay
	12.....	N	83	N along Bay
	13.....	SE	91	S across Bay
	14.....	SW	22	S across Bay
	15.....	NW	1057	N along Bay
	16.....	N	224	N along Bay
	17.....	SW	18	
	18.....	SW	1	
	19.....	NW to SW	70	N along Bay
	20.....	SW	27	
	21.....	S	4	
	22.....	SW	3	
	23.....	SW	4	
	24.....	NNW	149	N along Bay
	25.....	N	163	N along Bay
	26.....	W	8	
	27.....	W to NW	28	
	28.....	S	4	
	29.....	SE	2	
	30.....	SE	0	
	31.....	ENE	0	
Nov.	1.....	NNE	22	N along Bay
	2.....	NNE	52	N along Bay
	3.....	N	226	N along Bay
	4.....	E	8	
	5.....	SSW	0	
	6.....	NW	166	N along Bay (last flight of season)
	7.....	ENE	1	
	8.....	E to N	5	
	9.....	NE	7	

TABLE NO. 2 (Continued).

Date	Prevailing Wind	Numbers of Sharp-shins	Direction of Flight After Reaching Pyint
10.....	SE	0	
11.....	S	0	
12.....	SSW	0	
13.....	S	1	
14.....	N	4	
15.....	N	2	

*Mutual Reactions of Hawks.*—The migrating Hawks were almost entirely silent, making sounds only when one bird would plunge at another. This parrying and diving is apparently in mock combat, as none of them seems to suffer damage.

Sharp-shins were seen to plunge at other Sharp-shins, at Cooper's Hawks, Broad-wings, Vultures and Eagles. Eagles were seen to tumble about in the air together. Pigeon Hawks chased Sparrow Hawks, Sharp-shins and other Pigeon Hawks. One immature Duck Hawk seemed to have great sport annoying any bird that came near. First, it would charge at a Vulture and then, folding its wings it would swoop at one Sharp-shin and then another.

#### FOOD HABITS DURING MIGRATION.

As would be expected with the great concentration of small migrants at Cape May Point, approximately 100% of the food of the Sharp-shinned Hawk and the Cooper's Hawk is birds. A large number of stomachs were examined during 1931 and 1932 and a few during 1935. These were birds that had been shot by local gunners.

**Accipiter velox.** SHARP-SHINNED HAWK. 189 stomachs of the Sharp-shinned Hawk contained 208 birds of 44 species.

Although one of the commonest sights during the Hawk flights is a screaming Flicker with a little Sharp-shin in hot pursuit, there was not a trace of a Flicker in any of the stomachs examined. It seems as if they just enjoy hearing the Flickers squeal.

Warblers and other small birds are not so fortunate. Cuckoos are the largest birds normally killed by the Sharp-shin. No game birds were found.

**Accipiter cooperi.** COOPER'S HAWK. 22 stomachs of the Cooper's Hawk contained 30 birds of 17 species. One stomach contained a trace of a beetle.

**Falco c. columbarius.** PIGEON HAWK. A number of stomachs of the Pigeon Hawk were examined during 1931 and 1932. These contained more dragonflies than anything else. It is interesting to note that good Pigeon Hawk days are often good dragonfly days. The food supply seems to arrive with the Hawks, influenced by the same wind conditions.

Forty-one (41) stomachs of the Pigeon Hawk contained:

115 Dragonflies, 2 Crickets, 2 Grasshoppers, 34 Birds, 2 Red Bats, 1 Field Mouse.

On one occasion a Pigeon Hawk was seen to perch on a pine branch and eat a dragonfly while a Mourning Dove looked on less than five feet away.

A Pigeon Hawk was seen to harass a flock of a hundred Yellow-legs feeding in a flooded cornfield. It would swoop at the flock and send the birds to another part of the pond. It frightened them up repeatedly, but never struck down a bird. Eventually, the Yellow-legs lost most of their fear of the Hawk and fed within a short distance, while it preened itself on a fence post. As the play of many animals is closely akin to food-getting, it is probable that this chasing might be interpreted as such.

#### ANNOTATED LIST OF HAWKS.

**Cathartes aura septentrionalis.** TURKEY VULTURE. In Cape May County the Turkey Vulture is much commoner during the winter months than in the summer. Those breeding in northern New Jersey move out of that section of the State during the colder months, and probably help to swell the numbers that linger further south. The Vultures evidence some difficulty in attempting to traverse the waters of the bay. They arrive at the Point in their rocking and wheeling manner and on reaching the water the loose groups assume a single-file formation,— as if each bird were tied to a string, and proceed in a straight line across the water.

If the wind is a quartering one, from the northwest, then attempts at crossing are futile. They lose ground rapidly and drift toward the ocean. One flock of Vultures was seen to make three such attempts. Each time the flock returned to resume its intricate wheeling and make a fresh start at a different air-level. When finally seen the number had nearly doubled, and the birds were so high they could scarcely be discerned without a glass.

**Accipiter velox velox.** SHARP-SHINNED HAWK. The first Sharp-shinned Hawks put in their appearance on August 23, 1935, but the species did not become common until the second week in September.

Of the 8206 Sharp-shins recorded during the 1935 season only 26 were positively identified as adults. In 1931 only two adults were recorded. Normally, the Cape May flight is made up almost entirely of immature birds. Perhaps the immature birds are less inclined to hold their course along the Alleghany ridges, and when the wind is strong, to take the course of least resistance and drift over the low country toward the coast. They perhaps ride the ridge drafts until they reach one of the frequent breaks or gaps and then make the departure. At Hawk Mountain in Pennsylvania, the flight is composed of a large percentage of adults, ranging from 20% to nearly 100% on different days.

On October 21, 1932, a very strong northwest wind brought an exceptionally great flight of Hawks to Cape May—4562 birds—this included a good percentage of adult Sharp-shins, the only adult flight of which we have any record. This indicates that it probably takes a much stronger wind to induce the adults to leave the usual path.

The bulk of the Sharp-shins fly in the morning from 7:30 to noon. They feed along the way,—at least after turning north at the Point. Very frequently a Hawk would veer suddenly in its course and dive at a small bird near the ground.

By the middle of the afternoon most of them are resting.

**Accipiter cooperi.** COOPER'S HAWK. The Cooper's Hawk flight starts a little later in the season than that of the Sharp-shin. The numbers are much smaller—in the neighborhood of 10%. This 10% figure seems to hold quite consistently in the daily flights.

Immature birds predominate in this species also.

**BUTEOS.**—The Buteos seem to require quite a sustained blow to bring them to Cape May in numbers. They arrive in long strings high in the air and circle around

in groups when they reach the Point. There they wheel, gaining altitude. This makes it difficult to determine exactly how these birds make their departure.

Their numbers vary greatly from year to year.

***Haliaeetus l. leucocephalus.*** BALD EAGLE. The bulk of the Bald Eagles during the fall migration of 1935 passed through during the first and second weeks in September. Of the sixty Bald Eagles that were observed, nearly fifty were immature birds. A few pairs of Bald Eagles breed in southern New Jersey, but these birds tend to remain in the vicinity of the nest throughout the year.

***Circus hudsonius.*** MARSH HAWK. The Marsh Hawk occurs in scattered groups, seldom arriving in the concentrated numbers of the other Hawks. October is its month.

***Pandion haliaetus carolinensis.*** OSPREY. Ospreys nest abundantly in lower Cape May County so the count of 706 Ospreys in 1935 may mean a great deal of duplication. The greatest numbers of those obviously on migration passed through during the second and third weeks of September.

***Falco peregrinus anatum.*** DUCK HAWK. The few Peregrines that were noticed seemed to be more independent of the influence of wind than almost any other species.

***Falco columbarius columbarius.*** PIGEON HAWK. Pigeon Hawks seem to fly more in the afternoon than do the other Hawks at Cape May.

On the 16th of September, 1935, late in the afternoon, a small Falcon which was identified at the time as an immature Pigeon Hawk (Peterson) came over the town of Cape May Point accoutred with falconry trappings. The jesses were trailing from its legs and its bell was ringing. It was found later that Captain Meredith, a falconer of Boonton, N. J.—140 miles to the north, lost one of two young Richardson's Merlins (*F. c. richardsoni*) two days before. Very likely it was the same bird!

***Falco sparverius sparverius.*** SPARROW HAWK. During the 1935 season large numbers of Sparrow Hawks went through between the 15th and 20th of September.

Along the ridges, Hawk Mountain, for example, the Sparrow Hawks are very few in number. It is possible that many of them take the Piedmont. In this connection it is interesting to note that on a change of wind into the proper quarter the Sparrow Hawks very frequently arrive first—then the Sharp-shins. In short, if the Sparrow Hawks take the Piedmont Lane they do not have to drift so far to reach Cape May.

#### BRIEF COMPARISON WITH OTHER CONCENTRATION POINTS.

Concentrations of Hawks similar to those at Cape May occur at several other points along the Atlantic Coast. Trowbridge in 'The Auk' in 1895 has shown that the Connecticut shore flights are composed largely of Sharp-shins which are brought by the northwest winds. The Fergusons in 'The Auk' in 1922 have shown that the Fishers Island flights are made up largely of immature Sharp-shins which arrive on northwest winds.

We have been informed that there is a great concentration of Hawks at Cape Charles, Va., which is quite identical to that at Cape May. These birds double back and fly north along the Chesapeake. Mr. Richard Pough has definite data on this same flight flying north along the Hooper Island district in Maryland. The birds are mostly Sharpshins and fly north during northwest winds. They apparently cross the



Chesapeake below the Choptank—which is about 100 miles north of Cape Charles. The authors hope to make a detailed check of the Cape Charles flight at some later date.

The Hawk Mountain flight in Pennsylvania is of a more normal nature; made up of birds that ride the air currents that are generated and forced upwards by the wind striking against the steep slopes. Buteos predominate but there are also a great number of Accipiters. Hawks migrate along various ridges in the neighborhood on almost any wind but there is a tendency for the largest flights at Hawk Mountain to occur on a northwest wind perhaps because it is the easternmost of a series of parallel Appalachian ridges and the birds are loath to leave it for the low country. In short, it is probably not quite a normal ridge flight.

At Point Pelee on the northern shore of Lake Erie the concentration of Sharp-shins is made up largely of immature birds which arrive via the lake shore and cross at this narrow point.

*Nat. Asso. Audubon Societies,  
New York City.*

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[In connection with the excellent account of the Cape May Point Hawk flight which Messrs. Allen and Peterson have presented it may be interesting to state that our attention was first called to the *northward* flights of birds along the Bay shore by the late Henry Walker Hand, of Cape May, who had given them a life long study and the information regarding them that the writer has presented at several meetings of the A. O. U. was largely furnished by him. Mr. Hand was of opinion that the birds were not searching for a narrow crossing of the River or Bay, but simply spread out over the wooded areas to feed, and passed on southward from the Point after the northwest wind had abated.—Ed.]

FURTHER REMARKS<sup>1</sup> ON QUISCALUS WITH A REPORT ON  
ADDITIONAL SPECIMENS FROM LOUISIANA.

BY FRANK M. CHAPMAN.

THANKS to the continued cooperation of Mr. E. A. McIlhenny I can now speak with some definiteness of the distribution and relationships of the forms of the genus *Quiscalus* in Louisiana. I present these data not alone as a contribution to a wider study of our Grackles but for their bearing on the problem of the methods of intergradation of representative forms.

My first paper on this subject has been so long out of print that I make no apology for again presenting a map which, semidiagrammatically, shows the distribution of Grackles when nesting and thereby illustrates the important position Louisiana occupies in an attempt to define their relationships and breeding ranges. In a word, all four forms of Grackles breed in that state and it is obvious that whatever we can learn about their intergradations there will be of value in their study elsewhere.

It will also promote a clearer understanding of our problem if I restate briefly the facts which have developed thus far:

*First.*—The Florida Grackle (No. 1) and the Bronzed Grackle (No. 4), within the limits of their respective ranges, are stable forms, but in the area between their ranges there is wide variation which eventually results in their complete intergradation.

*Second.*—Both to the northward and westward the Florida Grackle gradually changes into the purple-backed bird for which the name *Quiscalus quiscula stonei* (No. 2) has been proposed.

*Third.*—The Bronzed Grackle (No. 4) breeds from southern Texas to Newfoundland and Great Slave Lake with slight increase in size and no change in color, but from Louisiana to Massachusetts, wherever its range<sup>2</sup> meets that of Stone's Grackle, it intergrades with that form through an intermediate known as *Quiscalus quiscula ridgwayi* (No. 3). In Louisiana the zone of intergradation is about forty miles in width. In the Lower Hudson Valley, Long Island, and southern New England region it is much wider.

Turning now to Louisiana, the only state whence I have sufficient material to determine in some detail the distribution of these birds, the map and distribution table beyond, show that, broadly speaking, the southern part of the state is occupied by *stonei*, with intergrades toward the Florida Grackle, and in the southeast by occasional specimens of the last-named

<sup>1</sup> For preceding papers see Bull. Amer. Mus. Nat. Hist. IX, 1892, pp. 1-20; The Auk, LII, 1935, pp. 21-29; Ibid., pp. 418-420.

<sup>2</sup> Throughout this paper I am dealing only with breeding ranges and breeding birds.

form. Seventy-five miles west and about forty miles north of the range of *stonei* we enter the range of *æneus*. To the west *stonei* and *æneus* apparently do not meet. To the north they completely intergrade, sometimes within a distance of twenty miles, sometimes even at the same locality.

#### THE DEVELOPMENT OF STONE'S GRACKLE.

These data, in connection with those derived from a study of our Grackles elsewhere, support the belief that *æneus* has entered Louisiana from the west, *stonei*, from the east. In other words, that *stonei* has not been derived from *æneus* as, for example, the Boat-tailed Grackle (*Cassidix mexicanus major*) is said to have been derived from the Great-tailed Grackle (*Cassidix mexicanus mexicanus*), but is a bird of different geographic origin which has been brought into contact with *æneus* by mutual range-extension. When their ranges are sufficiently separated the birds remain distinct; but when they come together they intergrade.

For example, in southern Louisiana *stonei*, and its intergrades toward the Florida Grackle, are found west to Lake Arthur. At this point, Mr. McIlhenny tells me, their further range extension westward is prevented by the occurrence of a prairie region unsuited for their occupation and in which they do not occur. Their range, therefore, is here separated from that of *æneus* by a distance of about 75 miles, beyond which, from Beaumont, Anahuac and Liberty, Texas, we have 27 specimens of typical *æneus*.

A similar instance on a larger scale is found in Tennessee where, as I have stated<sup>1</sup> on the authority of Mr. A. F. Ganier, *stonei* is found in the eastern, *æneus* in the western part of the State, their ranges being separated by the Cumberland Plateau where Grackles are not known to breed. These cases, in my opinion, support the theory that *stonei* is a representative of the Florida Grackle and not, as I have tentatively suggested, "in whole or part the cumulative result of prolonged hybridism [with *æneus*], which, in the course of innumerable generations, has extended its influence from the boundaries of the range of *æneus* to well within the territory now occupied by the Purple Grackle [= No. 2 of the map]."

There are, however, several facts in connection with the development of *stonei* from the Florida Grackle which do not altogether conform to our idea of how an environmental race is formed.

Although this change is gradual, the cause or causes that produce it do not seem to act uniformly on all the individuals of the same area. Note, for example, the presence at three localities in southeastern Louisiana of both the Florida and Stone's Grackle and intermediates between them. A similar phenomenon has been found elsewhere, and since we do not expect the same environment to produce different results at one place it apparently

<sup>1</sup> The Auk, 1935, p. 28.

follows that the characters exhibited by *stonei* are not of environmental origin. Furthermore, the wide range of *stonei* and its consequent occurrence under different climatic conditions, for example, those of southern Louisiana and northern New Jersey, is additional evidence that its characters are not the product of its environment.

If we exclude the possibility of the present or past influence of *æneus*, we cannot attribute the existence of *stonei* to hybridism, for the breeding of a form with itself cannot properly be called hybridism, and in the earlier stages of its gradual separation from the Florida bird the nascent *stonei* is still essentially *quiscula*.

To what factors, then, may we attribute the development of *stonei*?

The Florida Grackle is not a variable form. In the color of its head it shows less variation than any other form of the group; but individuals rarely occur which show a pronounced approach to *stonei*. In my first paper on this subject I find that I actually referred four specimens in a series of seventy-two to "Phase No. 2," the phase I subsequently described as *stonei*. Among the fifty-seven specimens now available there are three of this nature. Two are from Jupiter, the other from Gainesville, and it seems probable that their variations from the typical bird, found in numbers at both these localities, is mutational in character and hence inherent. I suggest, therefore, that the changed population conditions incident to extension of range have permitted these mutational characters to find expression in *stonei*, which we may provisionally consider as neither the product of its environment nor of hybridism, but of heritable, individual variation, or mutation.

Further evidence of the origin of *stonei* from the Florida bird is supplied by the not infrequent occurrence in its range, and even in the area of its intergradation with *æneus*, of specimens with a violet-purple head. A violet-purple head is the distinctive character of *Quisc Alus quiscula*. All Florida birds possess it, but I have yet to see a specimen from well within the range of *æneus* in which it is typically developed. Its presence, therefore, may be attributed to the influence of the Florida, rather than that of the Bronzed Grackle, and it thus supplies additional evidence of the origin of *stonei* from *quiscula*.

#### THE INTERGRADATION OF *stonei* AND *æneus* IN LOUISIANA.

Returning now to Louisiana we find that at some point, as yet unknown, but evidently not more than seventy-five miles north of Beaumont, Texas, whence we have ten specimens of *æneus*, that form enters Louisiana on the first steps of its eastward range-extension. The first locality on this route represented in our collection is Boyce, Louisiana, some fifty miles east of the Texas line and eighty miles north of Lake Arthur (whence we have one



*stonei* and one intermediate toward *quiscula*). Twenty specimens from Boyce (May 20-22, 1935; ten males and ten females) are referable to *æneus* but two males have some blue-tipped feathers on the nape, indicating the proximity of *ridgwayi*. One of seven male specimens of *æneus*, collected May 11 in a small colony of building birds two miles south of Meeker, and three in five collected at Bunkie, forty miles southeast of Boyce, May 23, 1935, are similarly marked. Of seven specimens collected May 12 and 13, eight miles south of Bunkie, four are *æneus*, three have the blue-tipped post-nuchal marks mentioned above, and one is halfway between *æneus* and *ridgwayi*, indicating that we are approaching the center of the area of intergradation. It is evident, therefore, that at Boyce we are on or very near the line that marks the southern limit of the range of true *æneus* in this part of Louisiana. This line evidently extends southeastward to Bordelonville (May 9) and Moreauville (May 7), and thence eastward to Centreville, Mississippi (April 29). Ten specimens from the first-named station are all *æneus*, but one in a series of ten from Moreauville and Centreville has a few blue spots on the nape and a second from Centreville is halfway toward *ridgwayi*. The remaining eight are true *æneus*.

Ten specimens from Natchez (April 30), thirty-five miles north of Centreville, are, as might be expected, true *æneus*, but two in a series of ten from six miles south of Vidalia (May 2), which is across the Mississippi from Natchez, show in a slight degree the blue nape markings I have before mentioned. Similar markings, however, are sometimes found on specimens well within the range of *æneus*, for example, Hamilton, Kansas, and Erie, Pennsylvania, where they are evidently attributable to individual variation.

Having thus determined, with doubtless a fair degree of accuracy, the southern limit of the range of true *æneus* in Louisiana and the adjoining part of Mississippi, I attempt now to draw a line marking the northern limit of the range of *stonei* in that state. Here my material is not quite so adequate. It appears to show, however, that in the central part of the state this line runs between Coule Croche and Opelousas in St. Landry Parish. From the former we have the three specimens taken June 3, 1895, by Mr. McIlhenny. I refer them to *stonei*, but all three have the head of the Florida bird and a slight greenish tinge above and below which also indicates their relation to *quiscula*; and two have a bronzy tinge on the rump and, to a lesser degree, on the flanks which suggests the influence of *æneus*. I am at a loss to know how to interpret this latter character. South Florida birds not infrequently have the rump unmarked, purple bronze, but in these Coule Croche specimens, and some other examples of *stonei* from throughout its range, the rump is more bronzy and it is an open question whether this change is to be attributed to individual variation or an indirect connection with *æneus*. This increase in bronze on the rump is



shown in a specimen from Newport News, Virginia, which is very near *quiscula*, and also in the type of *stonei*.

The five specimens from Opelousas were taken June 2, 1895, also by Mr. McIlhenny. They have the head less violet than in the Coule Croche specimens, but in two of them the bronze is somewhat more pronounced and there is a suggestion of *ridgwayi* in the greenish markings of the back and underparts, which induces me to list them as intermediates between *stonei* and *ridgwayi*. If I am correct, the influence of *æneus* is thus shown at Opelousas.

We are now left with an area approximately forty miles wide, and in some places even narrower, in which to complete the intergradation of *stonei* and *æneus*. In fact actual intergradation of these extremes is shown by our specimens to occur at single localities and even in one colony.

Thus at a point on Highway No. 1, two miles south of Livonia and about thirty miles east of Opelousas, Mr. Nolan found grackles "nesting in oaks" and on May 16, 1936, collected 10 males. This series contains four specimens of *stonei*, one of *ridgwayi*, three intermediates between *ridgwayi* and *æneus*, nearer the latter, and two of *æneus*. Doubtless additional specimens would bridge the gap between *stonei* and *ridgwayi*. These birds, Mr. Nolan writes, were taken from one colony, and they offer, therefore, the most satisfactory evidence of the interbreeding of *stonei* and *æneus* that collecting has thus far revealed. In view of the prolonged period that these birds have doubtless been in contact it is indeed surprising that there should still exist conditions which so nearly resemble those we may imagine prevailed during the early stages of their association.

Essentially similar conditions were found by the collector at a station three miles south of Melville, about fifteen miles northwest of Livonia and twenty miles northeast of Opelousas. At this point a "colony of grackles were found nesting in cypress and pecan trees near the levee of the Atchafalaya River on Highway 816" and ten males were collected on May 14. Of these one is *stonei*, with a bronze rump and flanks, three are intermediates between *ridgwayi* and *æneus*, of which two are nearer the former and one nearer the latter, and six are typical *æneus*, except for an unusual amount of violet-purple in the head. Thus, again, we have both parental forms and intermediates between them breeding in one colony.

Our specimens indicate that a similar association is found in West Baton Rouge Parish (exact locality not stated) about fifteen miles southeast of Livonia, whence A. A. Allison sends us eight males, as follows: one *stonei*, March 5, 1903, "probably about to breed"; two between *stonei* and *ridgwayi*, April 18 and May 20, "breeding;" three *ridgwayi*, March 5, 1903 "perhaps about to breed," April 15 and May 21, "breeding;" one between *ridgwayi* and *æneus*, nearer the latter, May 12, "breeding;" one *æneus* with head of

*quiscula*, May 9, "breeding." While not so conclusive as that supplied by specimens taken on the same day in one colony, here is further evidence of the breeding at one station of *stonei* and *æneus* and connecting intermediates.

From Baton Rouge on the east side of the Mississippi I have already recorded six male Grackles taken by Nolan May 24, 1935. Four are *stonei* and two *ridgwayi*. Possibly additional collecting would have resulted in the discovery of *æneus*, which, as we have just seen, is found on the west side of the river, while six miles south of Olive Branch, fifteen miles north-east, Nolan took ten specimens on April 27 of which six are *æneus* and four very near it. These birds were not breeding but they doubtless represent the nesting form.

Of eight specimens collected May 4 in a plowed field four miles north of Lindsay, and about twenty from the Olive Branch Station, four are between *æneus* and *ridgwayi*, three being nearer the former, one nearer the latter.

Of nine specimens collected May 6 in a plowed field on Highway 139 at the north end of the False River between New Roads and Port Allen, seven are *æneus*, two are halfway between *æneus* and *ridgwayi*.

Five specimens collected May 15 on Highway 384 at Woodside were nesting in cypress trees. Four are *æneus*, one is intermediate between *æneus* and *ridgwayi*, nearer the former.

This review of specimens from the area in Louisiana lying between the ranges of *stonei* and *æneus* demonstrates the complete intergradation of these birds, at times in the same locality or colony, and also indicates that *ridgwayi* is the product of their union. But as the pure strain of the primary parental forms became separated by their ever increasing progeny, *æneus* at the northern, and *stonei* at the southern border of the area of intergradation would breed only with the intergrade *ridgwayi* which thus on one side would merge with *æneus* and on the other with *stonei*. These, indeed, are the conditions revealed by our collections. Doubtless they would be shown more conclusively by further collecting at an increased number of selected stations, particularly in the southern part of the zone of intergradation.

Under these circumstances the abundance and degree of development of *ridgwayi* should depend on the extent of territory it occupies and hence the distance of its removal from the influence of the original parents.

As one critically examines the accompanying distribution table he is impressed by the comparative absence of specimens showing the full development of the characters that distinguish *ridgwayi*. This circumstance is in part due to the fact that most of our stations in the area of intergradation are nearer to the range of *æneus* than to that of *stonei* but also, I feel, to the proximity and relative abundance of the parents concerned.

While specimens of *ridgwayi* from Louisiana can be duplicated from

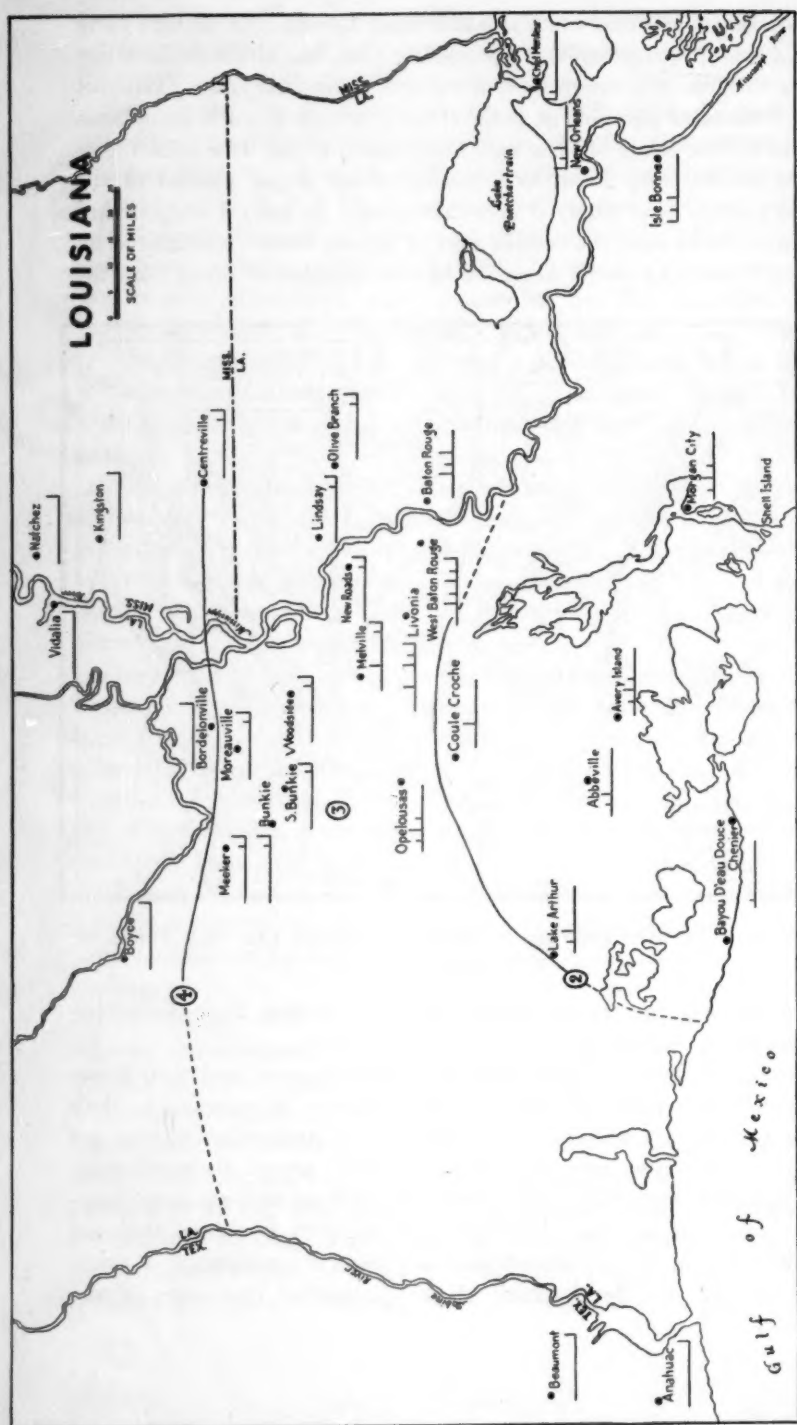
wherever *æneus* and *stonei* come together when breeding; in eastern Long Island, for example, *ridgwayi* is the prevailing form, and although the intergradation with *æneus* is complete, true *æneus* is almost unknown. Without evidence from other parts of the birds' range it would, in truth, be difficult to account for the origin of these east Long Island birds. One asks, therefore, how hybrids may occur in a locality where actual contact of the presumed parents must rarely if ever take place. In reply I suggest that Long Island, or at least the eastern part of it, was formerly inhabited by *æneus* which has been nearly absorbed by the intrusion of *stonei* from the



SEMI-DIAGRAMMATIC MAP SHOWING BREEDING RANGES OF THE FOUR FORMS OF *QUISCALUS*.

west, leaving only the results of their union to develop their distinctive characters by interbreeding.

Moreover, it should be noted that *stonei* and *ridgwayi* and their intergrades winter only within the range of *stonei* whence, in returning to their breeding areas on the Atlantic side of the zone of intergradation, they are not unlikely to nest in new stations and thereby extend their influence. Thus in the New York City region the ranges of *stonei* and *æneus* are separated by approximately two hundred miles while in Louisiana they are within 40 miles, or less, of one another and there is consequently a much smaller area for the development of the distinctive characters of the intergrades.

DISTRIBUTION OF *QUISCALUS* IN LOUISIANA.

2. Northern limit of *Q. q. stonei*; 3. Zone of intergradation of 2 with 4. In the symbol [||||] the longer upright marks indicate (left to right), the presence of *Q. q. quiscala*, *Q. q. stonei*, *Q. q. ridgwayi*, and *Q. q. arvensis*. The shorter marks stand for inter-

DISTRIBUTION OF *Quiscalus quiscula* IN LOUISIANA.

	Florida Grackle No. 1	Intermediates	Stone's Grackle No. 2	Intermediates	Ridgway's Grackle No. 3	Intermediates	Bronzed Grackle No. 4
SOUTHERN LOUISIANA WEST TO TEXAS							
Chef Menteur, La.....	1	2					
New Orleans, La.....	1	1	4				
Iale Bonne, La.....	1	4	2				
Grand Isle, La.....	1	2	5				
Bayou La Fourche, La.....			1				
Shell Island, La.....		1					
Morgan City, La.....		1	4	1			
Avery Island, La.....		7	10	1			
Abbeville, La.....		1	3				
Bayou D'eau Douce, La.....		2					
Chenier, La.....		1					
Lake Arthur, La.....		1	1				
Beaumont, Texas.....							10
Anahuac, Texas.....							7
Liberty, Texas.....							10
SOUTH CENTRAL LOUISIANA TO SOUTHWEST MISSISSIPPI							
Coule Croche, La.....			3				
Opelousas, La.....		1	2	2			
Livonia, La.....			4				
West Baton Rouge, La.....			1	2	3	1	1
Baton Rouge, La.....			3	1	2		
6 mi. so. of Olive Branch, La.....						3	7
Lindsay, La.....						4	4
New Roads, La.....						2	7
Melville, La.....			2			3	6
Woodside, La.....						4	4
8 mi. so. Bunkie, La.....						4	4
Bunkie, La.....						3	2
Moreauville, La.....						1	9
Bordelonville, La.....							10
Meeker, La.....						1	6
Boyce, La.....							10
Centreville, Miss.....						2	8
Kingston, Miss.....							1
Natchez, Miss.....							10
Vidalia, La.....						27	8

## HYBRIDISM.

Accepting as proven the intergradation of *æneus* and *stonei* it remains now to determine how it is achieved.

In my first paper on this subject I advanced the theory that their union was accomplished by hybridism. Further study has convinced me of the correctness of this view and I fail to see how anyone thoroughly familiar



with the facts can refuse to accept it. Robert Ridgway wrote:<sup>1</sup> "My own opinion in the matter exactly coincides with Mr. Chapman's," but subsequent writers have either rejected the theory of hybridization or considered it not proven. For this reason, and because increased data permit me to write with greater definiteness, I restate here the argument for the union of the Bronzed and 'Purple' Grackles by hybridism.

Hybridism in birds may be (1) sporadic or occasional, as among certain individuals; it may be (2) more or less frequent but not regular, as with *Vermivora pinus* and *Vermivora chrysoptera*; or it may be (3) regular and result in the intergradation of the parental forms along the line of junction of their respective ranges, as with *Colaptes auratus* and *Colaptes cafer*.<sup>2</sup>

Hybridism between species or races, as compared with hybridism between individuals, calls for a meeting of the ranges of the forms concerned. It is not, therefore, the interbreeding of individuals of a developing race which in a connected, even if changing, series have a continuous distribution.

According to this view, intergrades between *Sturnella magna magna* and *Sturnella neglecta* are hybrids, while those between *Sturnella magna magna* and *Sturnella magna argutula* are not. Again, in the gradual development of *Quiscalus quiscula stonei* from *Q. q. quiscula* the intermediates between them are not considered hybrids but in the comparatively abrupt intergradation of *stonei* with *æneus*, they are.

The case of *Quiscalus* belongs in the third group of hybridizing conditions which I have here briefly defined. In a recent paper (The Auk, 1935, p. 21) I have attributed the "coming together" of their ranges to the influences of post-glacial dispersal. In the present paper additional reasons are presented in support of the belief that *stonei* is a representative of the Florida Grackle and has, therefore, entered Louisiana from the East. It may also be suggested that the complete intergradation of *stonei* and *æneus*, wherever their ranges meet, is further evidence of their common origin in a preglacial period, as postulated in the paper just referred to.<sup>3</sup> It may, however, be asked that if they are now representatives of a common preglacial ancestor why *æneus* should be so stable, *stonei* so variable? While therefore it is admitted that the factors which have led to the development of *stonei* are not definitely known, there is, I feel, no reason to doubt its descent from *quiscula*. With this theory accepted, and I can think of no other to replace it, I proceed to restate the evidence for the hybridization of *stonei* and *æneus*.

It is unfortunate that, from the nature of the case, this evidence should be

<sup>1</sup> Bull. 50, U. S. Nat. Mus., p. 215.

<sup>2</sup> Cf. Allen, Bull. Amer. Mus. Nat. Hist., IV, 1892, p. 33.

<sup>3</sup> *Quiscalus quiscula* is recorded from the Pleistocene near St. Petersburg, Florida by Wetmore. (Smiths. Misc. Coll. 85, no. 2, 1931, p. 41.)

based wholly on specimens whose parentage is unknown, nor have I one observation reporting the actual breeding together of Purple and Bronzed Grackles. And unless such observation were accompanied by the specimens concerned it would have little value. Typical males of the different forms may be distinguished in life by an experienced observer under proper light conditions. But the females too nearly resemble one another to make possible the fine discrimination required in studies of this kind. Skins of typical females of the Bronzed and Purple Grackles are easily distinguished but I am unable satisfactorily to determine the status of intermediates between them.

Furthermore, in view of the fact that the nestling plumage of all the members of the genus *Quiscalus* is essentially alike, the characters of a Grackle family can not be determined without collecting the parents and rearing the young until they have acquired their first winter plumage. This is not impossible, but, so far as I know, it has not been done.

We may return, therefore, to our specimens and summarize the evidence they present in support of the belief that *aneus* and *stonei* intergrade by hybridism. The essential data having been presented in this and preceding papers, my summary may be brief:

*First.*—The exceptional stability of *aneus* throughout a breeding range reaching from Texas to Newfoundland and Great Slave Lake indicates that its abrupt intergradation with *stonei*, wherever their ranges meet, is not achieved by "geographic" variation.

*Second.*—The intergradation is confined to a narrow zone, extending from Louisiana to Massachusetts, in which both *aneus* and *stonei*, with intergrades between them, are sometimes found breeding at the same locality or even in the same colony.

*Third.*—*Quiscalus quiscula ridgwayi* is found only and always in this zone and is considered the primary product of the union of *aneus* and *stonei*. It differs markedly from both parents but possesses characters we should expect to find in a hybrid between them. The lower back and rump are rich bronze without the iridescent tips of *stonei*; the general color of the wings is that of *stonei* but the coverts lack the iridescent marks usually present in that form; the underparts, posterior to the breast, are rich bronze with but few iridescent marks on the sides; the foreback is brassy green. Since the apparent colors of the Grackles are structural one cannot readily predict the color to be expected in a hybrid between them but when in these dorsal feathers we discover a bronze band at the base of the iridescent tip, it is evident that in each feather we have combined the characters of both parents.

In addition to the evidence derived from a study of specimens and their distribution we should also take into consideration:

*Fourth.*—That the colonial nesting habit of Grackles with the consequent lack of individual territorialism lends itself to close association while nesting and consequently offers opportunities for hybridism, which is further promoted by their resemblance in habits and in the appearance of the females.

I present this paper as a report of progress and emphasize anew the importance of a continued study of Grackles in field and study. Their characters are so well-marked that these birds supply us with exceptionally definite data concerning their relationships, their progeny, and the factors governing their distribution.

*Amer. Mus. Nat. Hist.*

*New York City.*

#### POSTSCRIPT.

In response to my request Mr. McIlhenny has prepared the appended notes on the distribution of *Quiscalus* in Louisiana. They were received some time after my paper was finished.

F. M. C.

The breeding range of *Quiscalus quiscula aeneus* and *Q. q. stonei* in Louisiana is pretty well defined by the character of the country. *Aeneus* is not a colony nester but nests in scattering companies in the high, dry sections away from the swamps or wet sections. *Stonei* occupies the southern or swamp section of the state on both sides of the Mississippi River, west to the high prairie section, which begins at the Mermentau River and extends west to the Texas line. *Stonei* prefers as nesting sites trees actually growing in water, or near to water, which are heavily hung with Spanish moss. In the festoons of this moss is their favorite nesting site. *Stonei* nests in decided colonies, sometimes only a few nests in one tree, but often the colony will contain more than one hundred nests in a group of a few trees growing near together. A few scattering colonies are to be found a few miles west of the Mermentau River, but, generally speaking, this river is their western breeding limit in Louisiana. This river is the dividing line in the southern part of the state between the wet, wooded sections, and the dry, open prairie section. From the Mermentau River west to Texas is an almost unbroken stretch of high, dry prairie. In this prairie section neither *aeneus* nor *stonei* nest.

Going north from the coastal swamps, which are timbered with cypress and tupelo gum, little or no natural high, dry land is encountered until a line running east and west from the Mississippi River to approximately a little south of Alexandria, thence south through Eunice, Crowley, Lake Arthur, to the coast. South of this line embraces practically all of the

breeding range of *stonei*. North of this line, generally speaking, the land is dry and hilly, and the timber is pine, red oak, and other highland trees. It is approximately along this line, or a little south of it, that *aneus* and *stonei* meet during the breeding season. This fact has been definitely determined from specimens taken at many localities and identified by Dr. Frank M. Chapman. Both of these birds are resident in the southern half of Louisiana during the winter, and flock together commonly. As the nesting season approaches the two species gather in flocks to themselves, and *aneus* moves north during the month of March. Both birds are rather late maters, and do not normally begin to nest until the middle of April. *Stonei* apparently rears two broods in a season, establishing different colonies for each brood. The first brood is usually complete and on the wing by the 20th of May. The second brood is not out of the nest until after the first of July.—E. A. McILHENNY, *Avery Island, La.*

NOTES ON SIX NESTS OF THE KENTUCKY WARBLER  
(*OPORORNIS FORMOSUS*).

CHARLES F. DE GARIS.

Of the six nests of Kentucky Warbler described below, one was found in Riverview Park, Hannibal, Missouri and five were found in or near Baltimore, Maryland. This ratio of one to five appears from my records to be a fair index of the relative frequency of the species in these two states. Thus I have found this warbler in but three separate Summer locations in Missouri during a period of sixteen years, while during a period of ten years in Baltimore, and with much less extensive search, I have it recorded in at least fourteen June to September locations.

The first nest, that in Missouri, is described in some detail, both as to approach and observation; subsequent experience with the other nests was on the whole somewhat similar to this. Throughout a number of Summers I had seen a pair of Kentucky Warblers along the Woods Drive, Riverview Park, and naturally supposed they nested in that vicinity. Having the good fortune to be in Hannibal early in June, 1923, I decided to find this particular nest, if it required the exclusion of all other bird-study. As a matter of fact the nest was found with little difficulty.

The male's vigorous, vibrant song is usually to be heard some distance away, and since it is his habit to sing from the same thicket, even from the same perch, for long periods, he is not a hard bird to find. The song is quite constant in number of syllables for a given male, but varies from five to eight syllables in different males. The one I was observing along the Woods Drive had a song of six syllables, which he delivered with unflagging emphasis for hours on end.

On the first morning of my search I located the male singing among lower branches of a hickory tree on the steep hillside below the Woods Drive. I came within a few yards of him before he left off singing and began his loud call of alarm and protest. His mate joined him at once, and the two of them, finally seeming to agree that I was just a cow or something, drew closer and closer to inspect me. I sat down among the buckbrush and remained as motionless as possible, whereupon the male, leaving his mate in the hickory boughs, flew to a haw-tree at my back and came so near I could have touched him. But I knew the female was my only lead to the nest.

After some fifteen minutes of scolding the male returned to his hickory perch and resumed his six-syllable song, his mate the while picking at insects in a leisurely vireo fashion. I watched her intently, but in a sudden flight she was gone. Her direction was diagonally down the hillside and



toward the upper end of the ravine, but how far she went I did not know. The male also changed his perch to the drooping boughs of an elm directly across the ravine. I crept down the hill in the general direction taken by the female, and reached the rock-strewn waterway in the depth of the hollow before my presence attracted further attention.

This time the protest was violent. The female, rather perfunctory with her scolding before, was now flipping her tail and voicing hysterical disapproval, all of which encouraged my belief that the nest was somewhere near at hand. Again I sat down to wait, this time with an unobstructed view of many yards up and down the watershed. The female continued to scold long after her mate had returned to his singing, but at last she flew to a little pool up-stream a ways, took a few dips of water and went directly to a clump of vines thickly entwined about the partially eroded roots of a large elm. A more snug, inaccessible place for a nest would be hard to imagine. It was well above arm's reach up a sheer rock wall, and to approach it from above one would have to crawl out beside the elm on a ledge of clay and top-soil that seemed ever on the point of precipitating itself, the elm, the vine and other vegetation into the stream beneath. Incidentally that is just what happened a few months hence.

A ladder would have been most acceptable in the circumstances, but since I was not accustomed to carry a ladder in my field equipment, I had to use the only instrument at hand, a broom-stick with a large iron nut twisted on the cut end. With this I hewed away sediment and soil from various crevices of the rocks until I could scale the few feet that allowed me to view the inside of the nest with a pocket mirror. The nest, a gross structure of leaves with inner laminae of grasses and rootlets, contained five whitish eggs thickly and in part coarsely speckled with liver-brown.

Since my hewn steps in the rocks were something of a permanent improvement, I had ready access to the nest thereafter, barring a right awkward fall one wet morning. The mother was a very close brooder, being invariably on the nest when I paid my visits, morning, afternoon or evening. On no occasion was the male seen to brood, though he was always in attendance. Also hours of watching failed to disclose him bringing food to his mate. The female soon became accustomed to my intrusions, even remaining in the vine while I held my mirror above the nest.

On the seventh day of observation the nest contained four young and one egg, which latter was doubtless addled, since the next day I found it in large fragments on a bare ledge of rock, while the nest still contained four young. There appears to be a distinct difference in the treatment of shells from fertile and addled eggs. I searched diligently for pieces of shell from the four fertile eggs on the very morning they hatched, but not a trace of shell did I find anywhere in the vicinity of the nest.

The burden of feeding the young was assumed very unequally by male and female. The male continued to devote most of his waking hours to musical exercise, and only rarely passed on a small moth or fly to his mate. I tried repeatedly to ascertain by field-glass just what foods the female brought, but this was on the whole a fruitless undertaking. An assorted diet of bugs, flies, worms and grubs is as accurate as I can report.

The young were nest-fed eight and a half days. On the day they left the nest I visited them about nine o'clock in the morning, and found all four crying lustily, but the mother was not feeding them. I watched for more than an hour, during which time she frequently came to the vine with tempting food, but she kept clear of the nest and eventually ate the food herself. Before I left one youngster had managed to get up on the brim of the nest, and was promptly rewarded with a choice portion of dragonfly, strangely enough this time by the male, who was taking particular interest in the launching of his family. When I returned at two in the afternoon, the nest was empty, but all four of the little powder-puffs were accounted for in nearby shrubbery.

I saw them almost daily thereafter, and as late as seventeen days after leaving the nest they were still being fed occasionally by their mother and father. It seems remarkable that the father should have taken such an active part in the after-nest care, when he took almost no part in feeding the nest-young. I noticed that he seldom sang during the time he was caring for the young.

This brings up a question which thus far remains unanswered for me. During late July I found the male in full song again, and with the same vigor and steadfastness of June. The female and three of the young, now fine large birds, were located some distance down the ravine, and the female evinced no more than the usual friendly curiosity. If she had a nest anywhere in the neighborhood, she certainly left it for very long periods, and showed no anxiety about it. It may well be that she had become so used to my presence she no longer 'viewed with alarm' my almost daily visits. But the fact remains that I did not find a second nest of this pair, and I saw nothing whatever of a second brood. And this has been precisely my experience with other pairs of nesting Kentucky Warblers. I cannot say from first-hand information that certain of the other nests were not second ones, since in truth the last two of them were mid-July records.

The first nest found in Baltimore (1925) was in a dense undergrowth near a damp meadow adjoining the Catholic Colored Orphanage directly north of the municipal Stadium. This entire region, save the Orphanage and Stadium, has in recent years been so radically transformed for residential purposes that I could not now venture a guess as to where the nesting site or even the thicket used to be. This nest was built on the ground

in such a tangle of honeysuckle and locust sprouts that with the female leading me straight to it I still had difficulty finding it. The nest itself was set in a thick felt of leaves, and was lined with grasses, bits of raw cotton and cotton string and a narrow band of so-called "baby ribbon." Certain dump-heaps at that time not far away doubtless accounted for these artificial materials. The eggs, four in number, were ashy, sprinkled evenly with cinnamon. On the third day of observation (June 16) the nest was occupied by four young, and on the sixth day it was empty. That same day both male and female were found in another strip of woods adjoining the damp meadow, and the male was singing right heartily. My reasons for assuming that this was the pair whose nest had been robbed were two: first, my repeated visits to this last named strip of woods had not until then disclosed a pair of Kentucky Warblers, or even a single one; second, the male found singing there that day had the same seven-syllable song that characterized the owner of the nest, there being a short extra syllable uttered as a kind of fillip at the end of the song. Both male and female showed the usual curiosity when I came near them, but neither did any serious scolding. I watched the pair for more than two hours, without finding anything to suggest renewed nesting activity at that time. A second nest may have been built by this pair later in the Summer, but up to June 25 when I left Baltimore no nest was found. When I returned in September the birds were still using in this woods, but no young were observed anywhere in the vicinity. September 27 was the last date of record for this pair.

The third nest was found June 3, 1927, on a thickly wooded hillside just off the Providence Road back of the future campus of Goucher College, Towson, Md. A considerable expanse of marshy land lies on the other side of the road at the foot of the hill. I had seen Kentucky Warblers for a number of years, along this woods—various paths and roadways, leading where I do not know, made the thicket quite accessible. On this particular morning I had started at sun-up with the purpose of finding a warbler nest, if a warbler could be found. As usual in this locality one of the first notes to greet me as I climbed the hill was that of the Kentucky Warbler. When I stopped to find the singer, he obligingly came more than half way to meet me, and was soon joined by his mate. But neither of them seemed especially anxious about anything. I sat down to wait, as usual, but this time I had a real problem ahead of me.

After formalities of curiosity toward the intruder, the female made a sudden dash for the male and the two of them romped hither and yon through the woods and at last disappeared among the cat-tails and tall grass of the marsh across the road. Such swift ending of high hopes gave no promise of the interesting situation that was to develop in connection with this case.

As I continued up the hill I flushed another male Kentucky Warbler. He was in full brilliant plumage, but he did not act as most males of this species do. Apparently he had no curiosity at all, but flew directly away from me up the path and resumed his feeding on the ground, uttering the while a most extraordinary sort of call-note, in vigor quite equal to that of the first male, but in tonal quality flat and uneven. Still it served me well, because it drew the rompers back to the hillside. So there I was with two male warblers and a very facetious female, and no clue whatsoever to a nest.

The next hour or more the female spent in boisterous sallies, now after one male, now after the other; frequently all three would become involved in a variety of cross-tag. At intervals the first male would stop long enough to sing a few phrases of his fine song, the usual six-syllable arrangement delivered in a loud, clear voice. The second male, too, did what he could in this way, but his voice, while loud enough, was harsh and cracked, and his song, if such it may be called, was wholly cacophonous.

As I was nearing my last shred of patience and was about to return home, the first male launched a particularly vicious attack on the second, and the two of them went screeching and yodelling down the hill, across the marsh and out of sight. The female at this juncture dropped quietly down a steep gutter of the hill and for the moment was lost. But the top-foliage was so dense that there was little in the way of ferns or ground coverage, save here and there vines of wild grape growing over prone trunks of trees. I was just in time to see her enter one of these vines, and since she did not move about as if feeding, I concluded that the nest was there. So it was, the usual bulk of leaves piled on the ground against an enormous lichen-covered log and deeply sheltered by fronds of fern and grape. This was without doubt the most elegantly constructed nest of the whole series reported here. Its interior was oval, about 2 by  $1\frac{1}{4}$  inches, the long axis parallel to the side of the log, and the lining of grasses, rootlets and hair was extended over the bowl in canopy fashion, a treatment especially adapted to placement of the nest against, and under the log.

On the first morning of observation there was but one egg; the next morning at about eleven o'clock there were three, my inference being that on the first morning I had disturbed the female when she was about to deposit her second egg. On the fourth day at 2.15 p.m. there were still three Warbler eggs, and this time a Cowbird egg. I have yet to see a Cowbird in that vicinity; nevertheless there were Cowbird eggs. To remove the alien egg offered certain difficulties, since the bowl of the nest was deep and the canopy rendered use of a spoon quite awkward. I made a trip home for a cotton applicator and a stick of sealing wax. By placing a globule of melted wax on the tip of the applicator and then resting the waxed tip on



the Cowbird egg until the wax hardened, I was able to lift the egg out of the nest without so much as touching nest or Warbler eggs. On the fifth day this same manipulation had to be repeated to remove a second Cowbird egg. On the sixth day the fourth and last Warbler egg had been deposited. These eggs were distinctly different from others of this species I have seen, in that they had something in the nature of a circlet of umber spots around the larger end while the rest of the surface was almost free of markings. The ground color of these eggs was white with a faint tinge of blue.

Since I was unable to visit this nest daily, my records do not show the exact period of incubation. The full set of four eggs was in the nest on June 14, but at my next visit, June 17, I found three young in the nest and large fragments of a single egg-shell on the ground near-by. This again appears to have been a case of an addled egg, such as I observed in the first (Missouri) nest. Unfortunately I had to leave Baltimore on June 20, without even a parting visit to this nest.

The most interesting circumstance connected with this nest was the presence of the extra, or second, male. During the incubation period this male was a constant attendant, and frequently brought food to the female, this of itself being not in the best tradition for males of the species. The first male, as usual singing with utter abandon, gave little heed to the second, his rare and rather awful attacks being his only expression of interest. I never witnessed the outcome of these attacks, since the headlong chase invariably brought up somewhere in the marsh across the way. The unusual solicitude of the second male for the brooding female, his apparent fear of physical encounter with the first male, and his wholly inadequate vocal attainments strongly suggest that he was a sex-intergrade with some radical insufficiency or maladjustment of the endocrine system. This is the only case I have encountered with this species, and one of the few I have found anywhere of unmated "helpers at the nest," as delightfully described by Skutch<sup>1</sup> in reference to certain Central American birds.

The fourth nest was of particular interest because I was able to observe it in process of construction and through the entire period of incubation. It was located just off a narrow strip of oak grove back of the Edgewood Sanitarium, Bellona Avenue, Baltimore. An area on the other side of the grove was usually damp, doubtless was at one time a swamp, and a drainage ditch ran through it parallel to the grove.

I first saw the Kentucky Warblers in this neighborhood during late May, 1929, and was especially attracted by the eight-syllable song, there being an additional short note at the end of the second and third phrases. On the evening of May 30 I had just engaged a seat at the end of a vegetable

<sup>1</sup> Skutch, A. F., *The Auk*, vol. LII, p. 257. 1935.



garden overlooking the grove and was for the moment preoccupied with the number and general prosperity of rats at a nearby dump, when a female Kentucky Warbler appeared on a fence paling but a few feet away and began to sort wisps of grass. The male was nowhere to be heard at the time, and the female took not the slightest notice of me. She carried her grass to a fence corner of the garden and began arranging it. A more ill-advised site for a nest I could not fancy. There was no grace of logs or lichens, ferns or vines, no shelter of any kind, in fact nothing but a heap of clods and leaves raked from the garden. Where these filled an angle of the fence paling at the garden corner she was beginning to line a nest.

With the purpose of offering her a choice of artificial materials, I worked till dark assembling bits of plain and colored string, thread, cotton and wool, and such fragments of ribbon and rayon as I could find. The next morning I was on hand early to await results. I could hear the male some distance away, but it was a full half-hour before the female put in her appearance. When she did, she carried grass, made several trips for grass before taking any notice of my bargain counter display. Finally she became interested in a bit of brown sweater wool, which she promptly conveyed to the nest. Then followed white string, green string, yellow ribbon and the like, taken with little or no deliberation. A piece of pale blue rayon gave her pause, but after shredding it a while she took it on to the nest. However, she eschewed all materials of carmine, scarlet and purple. By the evening of that day the nest was apparently complete.

For two days thereafter I saw nothing of the female, though the male continued to sing from his favorite perch in the lower boughs of an oak. On the third day I still saw nothing of the female, but found an egg in the nest. Each day after that an egg was deposited, until there were five. This, I supposed, was the complete set, but two days later a sixth egg was laid. These eggs, almost perfectly ellipsoidal, were grayish white, finely and sparsely flecked with chestnut. The incubation period was thirteen days, during which the female as usual brooded closely and the male was almost constantly in song. All six eggs hatched, but on the next day there were only four young in the nest, on the third day only one, and on the fourth day the nest was empty. I have no direct evidence in the case, but the very exposed position of the nest and the plenitude of rats offered an incriminating nexus.

The fifth and sixth nests were both mid-July records of 1933. The fifth was found July 13 on the same hillside and not far from the same site as the third, which latter I always recall as the nest with the unmated helper. This time there was no such helper present on the single occasion of my visit to the nest, but the male had an unusual, as it were incomplete, song of five syllables, loud, uneven and not of a quality to be called musical.

It is of course tempting to assume that this was the unmated male helper of six years ago, now become sexually adequate. While this is to a degree plausible, the meager evidence at hand surely does not establish such a conclusion.

The nest contained three well-fledged young; and the mother, but not the father, was fully occupied with their food problems. This nest, unlike the beautiful structure I had seen there in 1927, was just a double handful of leaves with a shallow bowl of grass, and was placed on a slab of rock at the base of a persimmon sapling, with fair shelter on one side from some large-leaved vine of a kind unknown to me. Since more than a week elapsed before I could return to this locality, there was no further need of visiting the nest. I found the male, now singing only occasionally, and the scolding female in the marsh across the road. After a brief wait I located two of the young.

The sixth nest was found July 18th in a narrow ravine that leads diagonally from Stoneleigh swimming pool to Stevenson's Lane. The Kentucky Warbler was to my best knowledge a new-comer in this locality. Since for three years I had lived but a few blocks away, and was accustomed to visit this shady retreat almost daily during the summer, I can say with assurance that until then no Kentucky Warblers had nested there within the period of my sojourn. I found the nest, as usual, by hearing the male and following the female. It was at the edge of a thicket in a clump of grass overhanging the foot-high earthen bank of the stream. The grass thereabouts was long and densely matted, so that in this one instance there was no foundation of leaves. The nest was merely a thick welt of rootlets and grasses, with bits of cotton and hemp twine woven in, and a few 'clippings' of green newspaper by way of foundation.

On the first day of observation there were two eggs, and in as many days two more were added to complete the set. These eggs were very similar to those of nest 4 in being almost perfectly ellipsoidal, and were thinly sprinkled and streaked with olive brown; the streaks and coarser markings prevailed at one end. By reason of this pattern of marking and the great convenience of having a nest so near home, I was able to keep close records of the daily position of the eggs. To facilitate this part of the observation I numbered each egg with brown ink, applying this with a small brush at the more accessible pole of the egg. By these means I found that each egg was turned on its long axis once, sometimes twice, every twenty-four hours, and that the relative position of the eggs to each other was variously altered from time to time. But watch as long and closely as I might, I never happened to see the female in the act of turning the eggs.

This female emphatically disapproved of me. At first she would not return to brood as long as I was on the opposite hillside watching with a

field-glass, and I could count on frantic demonstrations from both male and female every time I looked into the nest, which unhappily was quite often. It was my impression that this female brooded much less closely than others I had seen. But after twelve days' incubation all four eggs hatched, and after ten days of nest-feeding the vigorous brood of four was brought off.

I happened to be on hand when the first youngster left the nest. The parents created an exceptional stir that morning when I came near, and must have imparted their excitement to the young ones, because all of them began to flutter and scream in unison and so violently that one was thrust over the brim of the nest into the tall grass. There he gasped and screamed and floundered for a long time before finally attaining a nether twig of the thicket, which swung his weight perilously above the brook. After numerous awkward adjustments to his perch he took off on his first flight and plumped squarely with his chin on a tiny sand-bar beneath. I thought how like this flight must have been that ill-fated venture of Leonardo da Vinci's pupil, Astro da Peretola, who, much against the master's wish, hoisted their flying contraption to a housetop and after numerous adjustments let go and promptly converted himself and the machine into a heap of débris.

This panorama of thought was rudely interrupted by a large tawny cat springing in the direction of the hapless young flyer. The cat fumbled its first pass at the bird and became so mired in the soft mud underlying the sand-bar that I had just time enough to reach the scene and deliver a broom-stick whack on the cat's lumbar region. Whereupon I too stepped half-knee deep in the mud. The whole situation was right *maladroit*, to say the least. But the cat retreated by leaps and bounds and the young bird struggled to another perch, from which he shortly took off again, this time making it back under his own power to his screaming parents. The condition of my footwear being what it was, I did not tarry for further demonstrations of first flights.

When I returned that afternoon I could hear desperate protests from the parent birds long before I came within sight of the thicket. My guess was that the cat had returned; in fact, anticipating just this I had borrowed a small rifle in the hope of coming to final understanding with the cat. My guess was correct, but the cat had seen me first and was already 'withdrawing to a prepared position' when I reached the thicket. In response to my one shot the cat leaped straight in the air, and then sped up the hill with such vim and vigor that I could not persuade myself to accept the understanding as final.

I had some difficulty finding the young birds. They were in the mid-upper branches of the thicket, utterly voiceless and motionless, and with all my search I could locate but three of them. The parents were much too excited to go on with feeding at that time, so I left them alone after such a

strenuous day. That day of their leaving the nest was August 11. Each day of eleven thereafter I found the brood being fed by male and female together. The last time I saw them, August 22, there were but two young. August 23 was the memorable day of the great nor'easter, when sheets of rain were whipped across the countryside by hurricane winds continuously for more than twenty-four hours. When I visited the thicket on the morning of August 24, a torrent was still pouring down the little valley, the whole configuration of the place had been changed, and the bird population had apparently been swept away. One bedraggled Flicker and a chipmunk were the only remaining wild-life I saw in the neighborhood that day.

#### SUMMARY.

It appears from my records that the Kentucky Warbler is much more frequent in Maryland than in Missouri. Of the six nests of this Warbler described here, each was located near a stream, marsh or damp lowland; each of five was built on a foundation of leaves, and all were lined with grass and rootlets. In two instances artificial materials, as cotton and woolen strings, ribbons and the like, were employed for lining. Five nests were directly on the ground. There was much individual difference in the extent to which shelter was sought for the nest. In one case (No. 3) a canopy was built over the bowl of the nest, even though leaves of vine already shaded it completely; in another case (No. 4) no shelter or shade of any kind was provided.

The eggs of different nests varied both in shape and markings. Eggs of some sets were bluntly pointed at one end, i.e., were distinctly ovate; those of two sets were almost perfectly ellipsoidal. The markings of some sets were fine and sparse; those of others coarse and in parts dense; they were always in one or another shade of brown. The number of eggs in a set varied from four to six. The incubation period, fully observed in two cases, was in one twelve days, in the other thirteen. During this period the eggs, as observed in one case, were turned on their long axis at least once a day. The period of nest-feeding was in one instance eight and a half days, in another ten days.

The male sang almost constantly during the periods of brooding and nest-feeding, but helped with care of the young when they left the nest. The song was usually one of six syllables, but whatever its variation it was constant for a given male. One male had a song of seven syllables, a short note being added to the third phrase; another had an eight-syllable song with short notes added to the second and third phrases. In one case there was an unmated male "helper at the nest," whose song was uneven and harsh. Six years later in the same locality there was a male with an unmusical song of five syllables.



No known second nests of this Warbler were found. From the six nests described here four broods were brought off. This ratio of successful nests is doubtless much too high for ground-nesting birds, if considered in series large enough for significant statistical treatment.

*Johns Hopkins Medical School,  
Baltimore, Maryland.*



## EUROPEAN GOLDFINCH NEAR NEW YORK CITY, 1915-1935.

BY J. T. NICHOLS.

THE first record of a completed nesting of the introduced British Goldfinch (*Carduelis carduelis britannica*) on Long Island, N. Y. (Nichols, D. G. and J. T., 1935, *Bird-Lore*, p. 288), which so far as I am aware is also the first record in the United States since this bird used, in the nineties, to be a common resident in Central Park, New York City, leads me to set down a résumé of my personal observations and some others that have come to my attention bearing on its history in the vicinity of New York.<sup>1</sup>

Griscom, 1923 (*Birds of New York City Region*) says that it had completely disappeared from Central Park in 1907.

From the fall of 1910 to the spring of 1916 I resided in Englewood, New Jersey, and shortly after leaving there prepared an annotated manuscript list of the birds of that area in cooperation with Mr. Griscom (Nichols and Griscom, 1918, *Birds of Englewood*) based on our personal observations and such others as were available to us at the time. In it we say of this species, 'uncommon in fall, winter and spring, probably breeds.' I find record in my journal of a flock of about eight on January 28, 1912; about six at Leonia on February 16, 1913; one on February 21, 1915, seven, one in full song, in a heavy wet snowstorm on March 6, a flock of about five at Coytesville on March 13 with the remark 'They seem to be unusually common in the Englewood region this year,' and the species singing on March 23, 1915.

While publishing records of an individual in Brooklyn, May 27, 1915, and April 27, 1918 (Fleischer), and one in Central Park, New York City, May 9, 1920 (L. N. Nichols), Griscom, 1923, was of the opinion (in which I did not concur), that the species had practically gone from the New York City region. It was very rarely observed and reported and may well have reached a low point in its numbers between 1915 and 1925. I had resided at Garden City, Long Island, for seven years before meeting with it there on May 20, 1923, one associated with and chasing a bright male American Goldfinch. There had been a number of scattered American Goldfinches about for some days, and a Pine Siskin seen in their company as recently as May 12. The association of the European with migrant or drifting native Finches is worth noting.

It was another ten years before I again observed a European Goldfinch in Garden City. Scattering records of its occurrence meanwhile are to be

<sup>1</sup> See Adney, 1886, *Auk*, III, p. 409; Woodruff and Palne, 1886, *Forest and Stream* (June 10), pp. 386-387.

found published in 'Abst. Proc. Linn. Soc. N. Y.' and 'Bird-Lore' as follows:<sup>2</sup> 1925, New York City; 1927, Clason Point, June 14 (Muller); 1928, Pelham, February 13 (Johnston); 1929, Ward's Island, August 8 (Cromwell), University Heights, New York City, October 10 (Cruickshank); 1930, Lambertsville, N. J., May 27 (Elliot); 1931, Westbury, Long Island, June 3 to 6, two birds (Matuszewski), Brooklyn Botanic Garden, two on October 10 and one on the 12th (Wilmott), and the species reported there in mid-September by another observer; 1932, Central Park, New York City, two on September 23 (Miss Johnson and Mrs. Edge) to September 26 (Brand and Watson); 1933, one at Bayside, Long Island, March 18, in song (Bohn).

To review briefly recent observations at Garden City. On April 21, 1933, I observed two, one in full song and one also carrying nesting material into a large, thick-foliaged pine tree. After two days, however, they were not seen again about this tree, though two were seen not far away, on April 30 and May 5, and three birds on May 11. Reports indicate that several individuals were present in Garden City that April. In 1934 a singing bird was observed in the same general locality on April 24, and on April 26 two together, after which the species was not seen again. In 1935 two were observed there on April 4 (D. G. Nichols), one singing bird on April 25, and on May 12 we found two birds flying back and forth in company and saw one of them visit and thus disclose their essentially completed nest, at a spot where they also had been observed May 3, 9, and 10 (D. G. N.). On the late afternoon of May 14 they were present, and one carried a beakful of material to the nest. On some seven dates that the nest was visited from May 15 to 30 one bird was on it, the other nearby only twice. On June 6, 7 (p.m.) and 9 (midday, overcast) it was uncovered and the old birds seen only on the 7th, feeding here and there together without approaching the nest tree. However, on the morning of June 12, D. G. Nichols found both old birds present and one on the nest, and on climbing the tree that it contained two young, well grown but still more or less in the pin-feather stage. That afternoon the nest was uncovered, and in some 15 minutes wait I observed the pair come into adjoining trees, but they did not go to the nest. When it was visited on the mornings of June 13 and 14 no old birds were about, but on the latter date there was a silent young bird, seemingly ready to fly fidgeting on its rim, and this is presumably the date on which the young left, without our having seen their parents bring food to them at any time; and neither old nor young were seen again that summer. Whereas it is true that visits had been few and scattering, partly due to other preoccupations and partly to avoid disturbing the birds, it does seem that the young had relatively little attention from their parents, perhaps correlated

<sup>2</sup> Abst. Linn. Soc., 1925-26, p. 63; 1927-28, p. 40; 1929-30, p. 29, 54; 1931-32, p. 57, 68; 1933-34, p. 99. Bird-Lore, 1931, p. 406; 1932, p. 397; 1933, p. 157.

with there being only two or with a long period in the nest. The nest was collected on June 19, and found to be plastered along the outer rim with excreta. The young had apparently been very untidy their last few days at home. It was placed 14 ft. 3 or 4 inches from the ground in a small maple, more than half way out from the trunk of the tree just above a limb where this began to fork, and rather well concealed by the leaves.

From a little study of the above data we perhaps can get a better understanding of the present status of this species. The same pair may have nested nearby for the last three years, it could easily have been overlooked, or it may not. The appearance of the species in April is attributable to a regular vernal movement corresponding to spring migration dates in Britain, just as mid-May corresponds to a first brood nesting date there. The small number of young in this brood and lack of any record of the birds at second brood dates may be due to chance but is probably significant. Most rare birds in these latitudes are so by reason of being out of their range of abundance but this one is probably adjusted to its environment on the basis of small numbers per unit area throughout.

Very likely the Westbury birds of June, 1931, only a few miles from Garden City, had a nest somewhere but at too great a distance to be found. The one at Garden City in May, 1923, may have been an unmated male, or have had a sitting mate. The correspondence of late winter dates at Englewood in 1912, 1913 and 1915 seems to me to indicate that such birds were also well established in their shallow environmental niche rather than lost stragglers; and though from further knowledge of its behavior I am less confident than then, that the species nested nearby, I see no reason to accept the opinion that it did not persist in the Englewood region, or to surmise that the Englewood birds may have left when I did and eventually relocated me at Garden City! In this connection I may call attention to the hypothesis that one living in an area may have better opportunity to pick up casually certain data that interest him there than any number of active field-trippers to the same area, though they obtain much the larger migration lists.

*Amer. Mus. Nat. Hist.,  
New York City.*

## NOTES FROM ELLIS AND CIMARRON COUNTIES, OKLAHOMA.

BY GEORGE MIKSCH SUTTON.

DURING the Spring of 1936 I made a study of the nesting habits of the Mississippi Kite (*Ictinia mississippiensis*) in northwestern Oklahoma. Establishing headquarters at Arnett, Ellis County, I remained in that vicinity from May 7 to June 18 save for eight days (May 31 to June 7) spent at Kenton, Cimarron County, in the western end of the Panhandle. A total of 139 bird forms was encountered. Of these the following twenty-nine species are of special interest, the Cassin's Kingbird Willow Thrush, and Bay-breasted Warbler being new for the State; the Magnolia Warbler not having before been collected; and the Gray Titmouse and Curve-billed Thrasher not having been known to be breeding species.

**Pisobia fuscicollis.** WHITE-RUMPED SANDPIPER.—This species is said by Mrs. Nice<sup>1</sup> (Birds of Oklahoma, Revised Edition, Publications of the University of Oklahoma, Vol. III, Biological Survey, No. 1, 1931, 93) to be an uncommon transient in Oklahoma. In Ellis County I recorded it almost daily from May 11 to 25, noting flocks of a hundred or more on several occasions, especially after heavy rains; collecting three males on May 11; and observing a single bird at a pond on the Davison ranch twelve miles southeast of Arnett as late as June 17.

**Micropalama himantopus.** STILT SANDPIPER.—Two were seen at a small pond on the McCullough farm six miles south of Arnett, Ellis County, on May 18. One of these, a female, was collected. Mrs. Nice (Ibid., 93) lists three specimens of this species for the State.

**Coccyzus erythrophthalmus.** BLACK-BILLED CUCKOO.—Mrs. Nice (Ibid., 103) calls this species "a rare transient in central and eastern Oklahoma" and "rare breeder in Tulsa county." At Arnett, Ellis County, the species is almost as common as the Yellow-billed Cuckoo, *Coccyzus americanus*, which is fairly common in wooded sections. While I did not find a Black-billed Cuckoo's nest with eggs or young, I saw a bird building a nest, several times encountered mated pairs, and on May 26 took a female that had been incubating eggs.

**Centurus carolinus.** RED-BELLIED WOODPECKER.—This species evidently ranges westward across Ellis County to the Texas State-line, for I found a pair and their almost fully fledged young on the Matthews farm eight miles southwest of Arnett, on May 21; and noted the species several times in the vicinity of Packsaddle Lake and Grand, along the South Fork of the Canadian River.

**Dryobates scalaris symplectus.** TEXAS WOODPECKER.—Rare in Ellis County. A pair with young just out of the nest were observed on the Matthews farm seven miles south of Arnett on May 21.

**Tyrannus vociferans.** CASSIN'S KINGBIRD.—Two mated pairs were observed along the mesa rims eight miles south of Kenton, Cimarron County. One of these pairs was collected June 1. The female was ready to lay eggs, though her brood-patch was not well defined. Mrs. Nice does not name this species in her list, and it is surprising that during the autumnal visits to Kenton made by Mr. Semple and

<sup>1</sup> Mrs. Nice has been good enough to give this paper a critical reading. G. M. S.



myself in 1932 and 1933 we so frequently recorded the Arkansas Kingbird, *Tyrannus verticalis*, but failed to note the present species.

**Myiarchus crinitus.** CRESTED FLYCATCHER.—Mrs. Nice (Ibid., 119) does not include Ellis County in the breeding range of this species. At Arnett, Packsaddle Lake, Harmon, and Grand I found it common in willow and cottonwood groves, collecting three specimens May 9–21.

**Sayornis phoebe.** EASTERN PHOEBE.—A nest with four small young was found in the old '101' ranch-house along Tesquesquite Creek, east of Kenton, Cimarron County, on June 2. The nest was built on a strip of wallpaper that sagged from the ceiling. Mrs. Nice (Ibid., 119–120) does not mention the nesting of this species anywhere in the Panhandle. Mr. Semple and I recorded it in the autumn on our earlier visits to the Kenton region.

**Nuttallornis borealis.**<sup>1</sup> OLIVE-SIDED FLYCATCHER.—Two female specimens were taken in a small canyon five miles southeast of Kenton, Cimarron County, June 2. These apparently are the second and third specimens for the State, a female having been taken at the mouth of Tesquesquite Creek by Mr. Semple and myself, on September 25, 1932 (Sutton, Notes on the Birds of the Western Panhandle of Oklahoma, *Annals of Carnegie Museum*, xxiv, 1934, 28).

**Corvus cryptoleucus.** WHITE-NECKED RAVEN.—Contrary to current belief, this raven is common in certain parts of western Oklahoma. In the vicinity of Arnett, Shattuck, Gage, and Grand, Ellis County, we encountered it constantly, recording from ten to sixty individuals per day and finding three nests—one with seven fresh eggs, collected with the parent birds May 12; one with seven highly incubated eggs, May 23; and one with five young almost ready to fly, June 16. The species is especially common along the highways where it feeds on jack rabbits killed by automobiles. In this respect it is noticeably different from the slightly smaller Crow, *Corvus brachyrhynchos*, which is only infrequently seen feeding in the open country.

**Corvus brachyrhynchos.** CROW.—Some form of Crow nests commonly in Ellis County, especially along the South Fork of the Canadian River, where, during early June, I repeatedly saw large flocks of young birds. Mrs. Nice (Ibid., 128) tells us that the Eastern Crow breeds 'as far west as Woods, Comanche and Tillman counties.' Ellis County birds are more than likely of this same race.

**Penthestes carolinensis agilis.** PLUMBEOUS CHICKADEE.—Fairly common in Ellis County along the wooded banks of streams. Mrs. Nice (Ibid., 131) gives the western limit of range as Woodward and Jackson Counties.

**Baeolophus bicolor.** TUFTED TITMOUSE.—Mrs. Nice (Ibid., 132) does not include Ellis County in the breeding range of this species. I encountered two pairs in the vicinity of Arnett, one on the Matthews farm seven miles south of Arnett, one near Packsaddle Lake, about a mile north of the South Fork of the Canadian River. The species is decidedly rare in the region.

**Baeolophus inornatus griseus.** GRAY TITMOUSE.—The Gray Titmouse nests in the Black Mesa country of Cimarron County. June 5, on the Regnier ranch eight miles southeast of Kenton, I collected a breeding female and observed a pair feeding young which were almost ready to leave the nest. The nest was in an old woodpecker hole in a large 'mountain' pine, a tree that is not common in the vicinity. Mrs. Nice (Ibid., 132) characterizes this bird as an 'uncommon winter visitant in Cimarron county.'

<sup>1</sup> *Nuttallornis mesoleucus* of the Check-List. For change of name see van Rossem, *Auk*, 1934, 548.



**Toxostoma curvirostre.** CURVE-BILLED THRASHER.—During the first week of June, I several times saw at long range what I felt sure to be Curve-billed Thrashers in the vicinity of Kenton, Cimarron County. Not until June 5 did I take a specimen (female), however; and on the same day I found a nest containing three small young in a dense clump of cholla cactus. The Curve-billed Thrasher is rare in the Black Mesa country. Mrs. Nice does not include it in her list.

**Hylocichla fuscescens salicicola.** WILLOW THRUSH.—Three specimens of *H. fuscescens* were taken: a male, at Arnett, Ellis County, on May 27; and a male and female along Tesquesquite Creek, east of Kenton, Cimarron County, on June 2. These prove to be of the western race, *H. f. salicicola*. Mrs. Nice does not mention either the Wilson's Thrush or the Willow Thrush in her list. From about May 25 to the end of the month we noted the species daily in the vicinity of Arnett, but found it exceedingly wary.

**Polioptila caerulea.** BLUE-GRAY GNATCATCHER.—Mrs. Nice (Ibid., 145) does not include either Ellis or Cimarron County in the breeding range of this species. On May 10 a nest and four fresh eggs were found not far from Packsaddle Lake a mile or so north of the South Fork of the Canadian River, in southern Ellis County. June 1, a pair feeding small young were observed at the John A. Regnier ranch-house, several miles southeast of Kenton, Cimarron County.

**Vireo belli.** BELL'S VIREO.—One specimen, a female, was taken along Tesquesquite Creek, east of Kenton, Cimarron County, June 2. The species apparently has not heretofore been recorded anywhere in the Panhandle. In Ellis County I found it nesting on the Grady Word ranch, six miles south of Arnett; near Packsaddle Lake; and at Grand.

**Dendroica magnolia.** MAGNOLIA WARBLER.—A female was taken in a locust grove near Arnett, Ellis County, on May 28. Apparently this is the first record for western Oklahoma as well as the first specimen to be taken in the State.

**Dendroica auduboni.** AUDUBON'S WARBLER.—Mrs. Nice (Ibid., 158) characterizes this species as a 'transient in the Panhandle.' Apparently it migrates to some extent across the body of the State also, for I noted it in Ellis County several times in mid-May, collecting a female at Arnett on May 12. I did not with certainty record the Myrtle Warbler, *D. coronata*, during my sojourn in the State.

**Dendroica castanea.** BAY-BREASTED WARBLER.—A female was taken among large cottonwoods along the Cimarron River on the Walker ranch several miles east of Kenton, Cimarron County, June 4. Apparently this species has not heretofore been recorded in the State.

**Oporornis philadelphia.** MOURNING WARBLER.—May 21 a male was collected in a locust thicket at Arnett, Ellis County.

**Dolichonyx oryzivorus.** BOBOLINK.—Recorded but once, a male collected along a roadside fence a mile southwest of Arnett, Ellis County, May 13.

**Icterus galbula.** BALTIMORE ORIOLE.—About Arnett, Harmon, and Peek, Ellis County, this species was abundant. Many nests were found. The Bullock's Oriole, *Icterus bullocki*, also was present, though comparatively rare. Mr. Grady Word, Mr. Jacob Gross, and other persons who have been familiar with the birdlife of Ellis County for years assured me that orioles had only recently become numerous in the region.

**Passerina cyanea.** INDIGO BUNTING.—A few nesting pairs were observed along the South Fork of the Canadian River in the vicinity of Packsaddle Lake and Grand, Ellis County. No specimen taken.

**Passerina ciris.** PAINTED BUNTING.—Two nesting pairs were encountered on

the Grady Word ranch along the Canadian River, about ten miles south of Arnett, Ellis County. A male specimen was taken at that place on June 11.

**Spinus tristis.** GOLDFINCH.—Rather rare about Arnett, Ellis County. Several males in high plumage were seen along the South Fork of the Canadian River on the Grady Word ranch, June 11 to 16; but no nests were found.

**Aimophila ruficeps eremoeca.** ROCK SPARROW.—A male with much enlarged gonads was taken along an arroyo on the Grady Word ranch 10 miles south of Arnett, Ellis County, on May 9. Mrs. Nice tells me that this species has not heretofore been recorded from Ellis County.

**Spizella pusilla.** FIELD SPARROW.—In the monotonous shinnery oak country south and east of Arnett, Ellis County, the Field Sparrow is one of the few characteristic birds. Three specimens were taken.

*Cornell University, Ithaca, New York.*

## THE BIRDS AT SOLEDAD, CUBA, AFTER A HURICANE

BY J. L. HUNTINGTON AND T. BARBOUR

THE Harvard Botanical Garden at Soledad, near Cienfuegos in Cuba, and the adjacent lands which will ultimately be included in the Garden have been for many years a wild life sanctuary. Except on occasions when the Woodpeckers become too active in damaging experimental plantations of fruit trees and when the feral Guinea-fowl become too abundant, no shooting ever takes place within this area of several hundred acres. The locality, moreover, has been under close observation by many observers during the best part of forty years, so that we know just about what the normal number of the common resident birds is, hence how many should be seen there, day by day.

On the night of Sept. 28-29, 1935, the barometer dropped to 28.60 inches. That evening at about 8 p.m., according to the account given us by Mr. Robert M. Grey, for many years the Superintendent of the Garden, the wind began to increase in velocity. Between 11 p.m. and 12 m. it was blowing between 70 and 80 miles an hour. At 1:30 a.m. on September 29 the velocity had increased to between 80 and 95 miles an hour with an occasional slight lull for a few minutes from time to time. The storm was accompanied by lightning and gusts of rain. The maximum force of these gusts can, of course, only be surmised and one person's guess is as good as another's. The velocity may well have reached 150 miles per hour to judge by the havoc wrought. The wind continued at maximum force until about 4:30 a.m. when it gradually diminished to between 60 and 65 miles per hour at 5 a.m., the lulls becoming more frequent. The hurricane began in the northwest, worked to westward, then to the south and finished in the southeast. The currents of air were extremely varied, frequently a long, steady blow would be followed by sudden, cyclonic twisters, seemingly from every direction, or a steady whirl would play on one spot for some minutes and then break into several swirls from two or three directions. The calmer intervals were of very short duration. Curiously enough the entire rainfall was but 1.69 inches, very much less than would normally be expected.

On the 15th of February we decided to make a careful estimate, over eight days, of the numbers of the species of resident birds normally to be seen in the Garden. In almost every case, with the exception of the Turkey Buzzard, the two species of Gallinules, Limpkin and the Mourning Dove, the number of common resident birds showed great diminution over normal years. Thus the common Riccordia Hummingbird was seen on but three of the eight days, two days but once, and one day twice, whereas normally the birds are constantly observable and the ordinary population of the area is probably well over twenty pairs. Of course blossoms were few, owing to

damage by the storm, but this Hummer is far from being as dependent upon flowers as are many other species. Todys were few, as also were the several species of Flycatchers. Of the common native Cuban Warbler (*Teretistris fernandinae*) but a single specimen was seen. Normally this bird abounds in what we call the Seborucal, a wild, uncultivated, wooded area adjoining the Garden on the south. The *Spindalis* was very scarce indeed. On four days we saw none, on two days but one, on two other days we saw but two each day. The little Ground Finches (*Tiaris olivacea*) were abundant but the numbers were certainly not more than twenty-five percent of the normal, whereas of the other species (*T. canorus*) which is never as common but still is far from being a rare bird, we never saw a single individual. Nor did we see a single specimen of the Black Finch, a bird which, in normal seasons, may be seen regularly in our little, wild forest preserve. Meadowlarks, Mockingbirds and Blue Thrushes were abundant and less obviously reduced in numbers, whereas the Herons, Hawks, and Rails were probably present in just about normal abundance.

These random notes are presented because they seem to prove definitely that the hurricanes play a tremendous part in affecting the abundance of birds for some time after they have occurred and because they record something more than impressions. One of us has had a number of occasions to visit islands in the Bahamas after hurricanes have taken place and to observe the almost complete disappearance of some native species, often for a number of years. But the Bahamas are flat and with little real forest to offer protection. In Cuba the environment is very different and birds obviously have a far better chance to survive under Cuban conditions but on the occasion of this storm at least the mortality was certainly very great.

Museum Comp. Zool.

Cambridge, Mass.

## GENERAL NOTES.

**Horned Grebe at Conowingo, Md., in July.**—While bass fishing in Conowingo Creek, a tributary of the Susquehanna River in Cecil Co., Maryland, on July 4, 1936, an adult Horned Grebe (*Colymbus auritus*) was noted at a distance of ten feet. It did not seem to be disabled in any way and was cornered in a cove at the base of a waterfall and photographed. I waded into the water up to my waist and forced it to dive when within three feet of me and it was interesting to note the manner in which it swam under water between the rocks in making its escape.—W. BROOKE MEANLY, *Baltimore, Md.*

**Western Grebe in South Carolina.**—On June 22, 1936, The Charleston Museum was presented with a fresh specimen of the Western Grebe (*Aechmophorus occidentalis*). The bird, a female in good condition, was brought in by a fisherman who had picked it up in the inland waterway one mile north of McClellanville, Charleston County, S. C. Examination showed that the bird had been shot. The largest ova were the size of No. 8 shot.

This occurrence adds another bird to the South Carolina state list and is, as far as I am aware, the first record for the Atlantic coast.

The specimen is No. 36,136 in The Charleston Museum collection.—E. B. CHAMBERLAIN, *The Charleston Museum, Charleston, S. C.*

**A New Family (Anhingidae) of Birds for the Fauna Columbiana.**—On August 7, 1936, I had a telephone message from Mr. Paul H. Hodge, Keeper of the Roaches Run Bird Sanctuary, stating that he believed that an Anhinga was frequenting this reservation, and asking me to check up the determination. This I did and found it correct.

It seems that Mrs. Hodge had first discovered this bird nine days before and correctly identified it. It is frequenting a tree on the west side of the island in the center of the lake, and judging from the chalking, seems partial to a definite roost. Mr. Hodge reports at this writing, August 19, that it is still present, which makes a sojourn of twenty-one days for its visit to him.—PAUL BARTSCH, *U. S. Nat. Mus., Washington, D. C.*

**Man-o'-war-bird in Oklahoma.**—On April 18, 1936, a female Man-o'-war-bird (*Fregata magnificens*) was captured alive near Anadarko, Grady County, Oklahoma, by Ranger J. R. Turnbull of the State Game and Fish Commission. The bird had been shot some days previously. It weighed three and three-quarter pounds and had a wing spread of seven feet seven inches. The specimen was mounted and is at present in the collection of the Game and Fish Commission at Oklahoma City. Mrs. Nice does not list the Man-o'-war-bird in the revised edition of her 'Birds of Oklahoma' (Publications of the University of Oklahoma, Vol. III, Biological Survey, No. 1, 1931) so the species apparently is a new one for the state. I report this interesting capture through the courtesy of my friend Mr. L. D. Rickey, State Game Warden of Oklahoma.—GEORGE MIKSCH SUTTON, *Bethany, West Virginia.*

**Snowy Egret in Massachusetts.**—On May 6, 1936, I discovered a Snowy Egret feeding in a salt pond on my estate at Falmouth, Mass., I walked up behind some bushes and examined it with an 8 power glass at a distance of about fifty yards. The bill and legs were black and the yellow feet very prominent as it walked about. It was interesting to see the bird puddle the mud with his feet every few steps, apparently to disturb the minnows on which it was feeding. Twice before Snowy Egrets



have visited my place but both times in July or August and this spring occurrence seems very unusual.—LOMBARD CARTER JONES, *Falmouth, Mass.*

**On an Unusual Feeding Habit of the Snowy Egret.**—In the April, 1936, issue of 'The Auk' (p. 203), Mr. Alexander Sprunt, Jr., records an unusual feeding habit of the Snowy Egret (*Egretta thula thula*) in a pool along the Tamiami Trail in the Everglades. The birds he observed fed like Petrels, hovering over the water and making quick darts downward with the bill.

I had never seen a Heron feed in that manner until June 7, 1936, when at Orange Lake, Alachua County, Florida, with Messrs. Roy C. Hallman and Alden H. Hadley. We had scarcely gotten out of the car at the boat landing when Hallman called our attention to a number of Snowy Egrets a hundred yards or more offshore feeding in the fashion described by Sprunt. I failed to notice that the birds patted the water with their feet, though they may have. They appeared to me to be feeding a good deal as our Gulls do on the St. Johns River, by hovering and snatching up morsels of food from the surface of the water.

It was on the deep, open water in the lake between Bird Island, where Snowy and other Herons nest in good numbers, and the mainland to the west that we saw the birds feeding in this Petrel or Gull fashion. Several Snowies continued this mode of feeding all during the time we rowed out to the island, and I noticed them at it time and again during a six-hour stay in my blind up in a willow tree in the rookery.

It is hard to believe that this is a recently acquired habit, but it is certain that Sprunt, Hallman, and I saw no birds so engaged while we were at Orange Lake for two or three hours on April 21, 1935.—S. A. GRIMES, *4661 Attleboro St., Jacksonville, Fla.*

**Unusual Feeding Habits of Some of the Ardeidae.**—On the morning of December 21, 1935, wishing to take some photographs of Ducks, I went into a blind I recently had built on a small island in the rest pond of my shooting grounds, just north of Avery Island, Louisiana.

I had noted that a great number of Pintails (*Dafila acuta*) and other Ducks were spending the day on the low banks of this small island, which is separated from the mainland by about thirty feet of shallow water. While waiting for the light to become strong enough for photography, I was interested in watching the birds come in. Many varieties of Ducks were present; also Coots (*Fulica americana americana*), Boat-tail Grackles (*Cassidix mexicanus major*), and Redwing Blackbirds (*Agelaius phoeniceus littoralis*) were around the blinds in numbers. American Egrets (*Casmerodius albus egretta*), Snowy Herons (*Egretta thula thula*), Louisiana Herons (*Hydranassa tricolor ruficollis*), and Little Blue Herons (*Florida caerulea caerulea*) came from "Bird City" to the shallow water shortly after daylight. There are usually a few hundred of these birds that do not go to Central America at the approach of cold weather, but remain in my Heron colony, "Bird City," at Avery Island, throughout the winter, obtaining their food from the surrounding shallow waters. This particular morning a number of the different varieties of Herons lit very near my blind, a good many of them in the shallow water between my blind and the shore, some of them within twenty feet of me. They began looking for food, and as the water was very cold, there being frost all over the grass, their usual food was apparently hard to find.

Hearing a splashing in the water where these Herons were, I looked more closely expecting to see Ducks, or other water birds feeding, and was surprised to see that the splashing came from the feet and legs of the Snowy Herons and Louisiana Herons,

which, as they slowly walked forward in the shallow water would stretch one leg far in advance of the other, all of the while vibrating it rapidly as the foot slid along the bottom. It was quite evident that this movement and vibration of the feet and legs was for the purpose of frightening the small water insects, or possible minnows, which might be hiding in the grass-covered bottom of this shallow area. From the numerous times they snapped up their frightened prey, they were far more successful in getting food than the other two varieties of Herons present which did not follow this method of hunting. In fact, American Egrets and Little Blue Herons did not move their feet or legs except in their normal steps.

In procuring its food the Louisiana Heron exhibits more individuality than any of the other Herons occurring in Louisiana during the warm weather. When in search of food in the shallow grass-grown ponds, or along the edges of deeper lagoons, it is a pretty sight to see a Louisiana Heron in action. They do not stand sedately and wait for the approach of the water creatures which constitute their food supply, but move along quite rapidly, sometimes with quick running steps. Every few steps a wing on one side or the other is flipped out, and again folded with a quick side jerk. Occasionally both wings are extended and their tips flipped sideways with quick jerky motions while the bird is stepping rapidly forward. The object being to frighten into movement the underwater creatures which otherwise would remain hidden in the undergrowth. As soon as one of these moves it is quickly snapped up in the Heron's long, lance-like beak. No other Heron in Louisiana has this method of getting its food. Nor do Louisiana Herons shake their feet and legs to put their prey in motion when the water is warm as they do in winter when the water is cold and their food supply inactive.

In times of drought when most or all of the shallow water marshes and swamps are dry, it is usual for Little Blue Herons, both adults and juveniles, to alight in the open grass lands and feed on insects. At such times insects constitute the entire food of this species. The other varieties of Herons and Egrets go to the tidal flats for food, but the Little Blue never hunts its food in salt water.—E. A. McILHENNY, *Avery Island, La.*

**The Redhead and Ring-necked Duck Breeding at Pymatuning Lake, Pennsylvania.**—These two species must now be added to the list of Ducks known to nest in the Pymatuning region of northwestern Pennsylvania. Mated pairs were repeatedly observed there in May by Mr. R. L. Fricke and the writer. We felt confident that they were breeding, but no nests could be located. In June Mr. Fricke reported seeing several broods of young, but of which species he was not sure. Early in July I went to Pymatuning (near Linesville) and through the courtesy of the Pennsylvania Board of Game Commissioners and their field representative, Mr. Burt L. Oudette, was permitted to take a few specimens of young birds for identification. Among these both the Redhead and Ring-necked Ducks are represented. The females of these two species, as is well known, are very similar in general appearance, and can scarcely be distinguished in life. The ducklings, too, are much alike, but those of the Ring-necked are darker in general coloration, while the outline of the feathers at the base of the upper mandible is blunt, not pointed—just as in the adults.

These records are new and unexpected for western Pennsylvania.—W. E. CLYDE TODD, *Carnegie Museum, Pittsburgh, Pa.*

**King Eiders in Massachusetts in May.**—On May 9, 1936, I observed at close range for some two hours an adult pair of King Eiders (*Somateria spectabilis*) at

Gooseberry Neck, Westport, Mass. The drake was still in breeding plumage. As Forbush's last date for Massachusetts is April 12, this pair seems worth recording.—ROLAND C. CLEMENT, 152 Tremont St., Fall River, Mass.

**Breeding of the Hooded Merganser (*Lophodytes cucullatus*) in Massachusetts.**—On June 16, 1936, the writer encountered a female Hooded Merganser and two approximately half-grown young on the flooded area of the Nashua River between Groton and Pepperell. This extensive area, caused by the damming of the river at East Pepperell, has many coves which the Mergansers frequent, stretching back from the main river, and there are many dead trees and stumps sticking out of the water. The birds allowed close approach, but were somewhat agitated, the young continually diving and the mother trying to distract one's attention by flying short distances and uttering its harsh, almost Crow-like cry. A canoe, an 8x binocular, and a 20x monocular glass were used to advantage. The birds were seen again on the 19th and 24th and each time were harder to observe.

This record is of interest because this Merganser has not hitherto been known to breed in southern New England. It is a rare summer resident in northern New England.—TUDOR RICHARDS, Groton, Mass.

**Wilson's Plover Taken Near Toledo, Ohio.**—On June 17, 1936, I collected an adult male Wilson's plover (*Pagolla wilsonia wilsonia*) from the shore of Lake Erie in Jerusalem Twp., Lucas County, Ohio. This bird was in good plumage, apparently in good physical condition, and very fat. The only irregularity noted was in the size of the gonads which measured: right,  $5.7 \times 3.9$  mm., left  $9 \times 4.5$  mm.

The Wilson's Plover was on a large sandbar associating with a small group of Spotted Sandpipers, Killdeer, and four Piping Plover which nested nearby. It was interesting to note that while the Piping Plover permitted the Spotted Sandpipers and Killdeer to approach their nest, they would drive away the Wilson's Plover when he approached.

This specimen is the first for the state of Ohio and one of the very few ever taken in the interior of the United States. The skin is No. 6980 in the collection of the Ohio State Museum.—LOUIS W. CAMPBELL, Toledo, Ohio.

**Second Record of Golden Plover in Alabama.**—On March 22, 1936, A. C. Martin, of the Bureau of Biological Survey, and I saw two American Golden Plovers (*Pluvialis dominica dominica*) on a sandy bar of Little Lagoon at Gulf Shores, in southern Baldwin County, Alabama. The birds were observed with binoculars and allowed us to approach as close as 50 feet before flying. This appears to be the second record for Alabama, the first having been obtained on March 26, 1933, and recorded by Mrs. Helen M. Edwards (Auk, vol. 50, p. 359).—HAROLD S. PETERS, U. S. Biological Survey, Auburn, Alabama.

**European Turnstone, A Correction.**—In the Auk, XXXV, 439, the late Arthur T. Wayne recorded as *Arenaria interpres* (Linn.) a Turnstone taken on Dewees Island, S. C. on May 31, 1918. Being unable to distinguish this specimen from several of *A. i. morinella* I recently sent the skin to Dr. Alexander Wetmore for determination. Dr. Wetmore considers the bird *morinella*. Accordingly, *A. i. interpres* has been removed from the state list.—E. B. CHAMBERLAIN, The Charleston Museum, Charleston, S. C.

**Wilson's Snipe (*Capella delicata*) Breeding in Dutchess County, New York.**—Records of the nesting of Wilson's Snipe in the northeastern United States are surprisingly few.

Sutton (Wilson Bulletin, Vol. 35, 1923) gives an excellent account of five nests discovered in Crawford County, in northwestern Pennsylvania.

Stoner (Roosevelt Wild Life Annals, Vol. 2, Nos. 3 and 4, 1932: Ornithology of the Oneida Lake Region) states that Wilson's Snipe "occurs fairly commonly in suitable situations in the Oneida Lake territory through the summer \* \* \* on June 22, 1928 in an open grassy marsh at Shaw Point I saw several individuals in the course of a half hour's walk. Mr. Edward Nicholson told me that on May 28 he found a nest containing four eggs, in a grassy marsh near Toad Harbor."

Eaton (Birds of New York, 1910) writes as follows: "I have found it breeding in Springville, Canandaigua outlet in Ontario County, and Bergen swamp; Mr. C. F. Stone has taken its eggs at Meridian, and reports of its nesting in Chautauqua, Genesee, Orleans, Oswego and St. Lawrence counties have come to my attention."

Merriam (A Review of the Birds of Connecticut 1877) writes: "Mr. W. W. Coe and Mr. J. H. Sage inform me that they took a nest containing three fresh eggs of this species at Portland, Conn., May 13, 1874. It was not previously known to breed as far south as Connecticut. The nearest approach to it is a set of eggs in the Smithsonian labelled Oneida Co., N. Y."

In a diligent search through many local lists and journals these are the only records that I can discover: otherwise Wilson's Snipe is mentioned only as a migrant, in our northeastern area.

On May 2, 1936, my son, Daniel W. Evans, while trout fishing flushed a Wilson's Snipe on the margin of a wet, boggy marsh along a branch of the Ten Mile River, which flows into the Housatonic.

This location is very close to 41°, 45' north latitude and 73°, 35' west longitude.

The bird sprung and flew swiftly and silently away for two hundred yards and lit far off in the marsh. Almost at his feet was the nest, deeply cupped, on the top of a small flat tussock of sedge about six inches square, and surrounded by thick black mud, here and there covered by a few inches of water.

The nest was a trim, well fashioned, though thin walled, structure of dry sedge and slender weed stalks. The eggs were four and closely packed, with their axes inclined about sixty degrees downward and inward; so that the larger ends only were clearly visible, the pointed apices fitting neatly together at the bottom of the nest.

In color these eggs were remarkably dark, almost a chocolate brown in ground color and heavily splotched with a still darker brown giving very little contrast.

While the nest was being photographed the bird flew swiftly past in a wide circuit and disappeared.

Two hours later, she was again upon the nest and again sprung wildly off and away with the same swift undeviating flight as before. The nest was carefully approached at this visit, in an attempt to photograph the brooding bird; but, although knowing the exact position of the nest, the eye could not discern the bird, closely pressed among the sprouting stalks of sedge (which were about five inches high) at six feet away. Another careful step forward and off she sprung.

On May 9, I was taken to the spot, which had been marked by two ranging stakes set up in the mud; one seven feet from the nest and another in alignment twenty feet back.

We reached the place at noon, with a brilliant sun and blue sky giving most radiant light. Creeping up stealthily, sighting along the stakes, we tried our utmost to see the bird; there was the small tussock six feet away; there was the small mat of green and russet sedge surrounded by black quaking mud in which we sank; there was the identical spot where the nest must be—but we could not see a thing except that little



flat tussock like thousands of others around. My son said, "Well probably some snapping turtle has eaten up the eggs; it is too bad." One more step forward and up the bird sprung, swift and silent as a thought; right at our very feet. Off she flew straight away, about six feet from the ground, with admirable acceleration and direct course for two hundred and fifty yards and sank to rest in the middle of the marsh. That was all. We did not touch the eggs nor disturb the surroundings. We were unable to visit the nest again.

The terrain was interesting; an ordinary, small, rich marsh of about ten acres; the nest being on the very edge of the marsh within fifty yards of the river and one hundred and fifty from a railroad track. The little river coursed through a sparse forest growth of maple, oak and ash, the nest being almost in the shadow of these trees, and not out in the wide depth of the marsh, as one might have supposed.

On the farther side of the marsh were rolling upland hills where cattle grazed and Grass Finches sang and lovely houstonias matched the blue sky. Overhead, three Turkey Buzzards were soaring.

There are hundreds of just such marshy tracts throughout this section of country and one wonders whether more of these Wilson's Snipe may not breed therein. Next spring we plan to visit the region in the evening and listen for the "winnowing" of these birds.

Another query: when we read Frank Forester's accounts of spring shooting a hundred years ago, we ask whether he did not many a time, unaware, shoot a bird startled from its nest.

Wilson's Snipe has nested, in the United States, as far south as latitude 34° north, in California.

The English Snipe (*Capella gallinago gallinago*) is said to breed in northwest Africa, which would also be about 34° north.—EVAN EVANS, M.D., *New York City*.

**Status of *Bartramia longicauda* in Lancaster Co., Pa.**—In 'The Auk' for 1925, I presented a note on this subject to which the present is supplementary. The rolling farmlands of central Lancaster County were probably the best breeding and feeding ranges of this bird in eastern North America and in my boyhood days, in the eighteen nineties, I often saw several hundred in a square mile of country. In 1914 it was taken from the game list and since then few if any have been shot in the county. Seeing that without local shooting the numbers of the Plover were decreasing, I began to take a census during the first week in August, the middle of the former hunting season, from 1921 to 1925. I counted the birds on four well separated tracts, on any one of which there would have been at least fifty Plover as late as 1900.

Alexander Wetmore has stated (*Our Migrant Shorebirds in Southern South America*, 1927) that this species has replaced the Eskimo Curlew as a table delicacy in the Buenos Ayres restaurants and that it is so eagerly sought by gunners in the Argentine that the possibility of preserving it in settled regions is doubtful. Since 1927, settlements on the Argentine pampas have greatly increased.

Assisted by Clifford Marburger, W. E. Brown and W. E. Zimmerman, as rangers, I resumed the census over the same tracts as before and the 1936 count is surprisingly satisfactory and seems to show that so far as Lancaster County is concerned the Plover is in no immediate danger of extinction.



	1921	1922	1923	1925	1936
Tract A.....	12	8	23	1	5
Tract B.....	3	9	36	3	22
Tract C.....	3	1	1	0	4
Tract D.....	3	4	18	1	11
	21	22	78	5	42

HERBERT H. BECK, *Franklin and Marshall College, Lancaster, Pa.*

**Upland Plover Found Breeding in Berkeley County, West Virginia.**—In June, 1935, I found two adult Upland Plovers (*Bartramia longicauda*) in an overgrown pasture in Berkeley County, in the "Eastern Panhandle" of West Virginia. I watched the birds for a period of two weeks but was unable to locate a nest. On May 31, 1936, I visited the same field and after an hour of searching I found one young, which could not have been more than a day old. The adults were uneasy when I took the fledgling from the field to photograph it. Although Upland Plovers occur sparingly in the state during the breeding season, I believe this is the first actual breeding record.—J. L. POLAND, *Martinsburg, W. Va.*

**Solitary Sandpiper in Summer at Deep Creek Lake, Maryland.**—For the past several summers I have noted Solitary Sandpipers, presumably of the eastern race (*Tringa solitaria solitaria*) around Deep Creek Lake, a large artificial body of water that lies on the Alleghany Plateau in Garrett County, Maryland. The birds have been noted in small numbers throughout June, and it is natural to assume that they may breed in the area, although no evidences of that have been found. The high altitude of the region (2600–3100 feet above sea level) has made it an attractive spot for many birds of northern association.

Mr. James T. Handlan, Jr., tells me that he has seen Solitary Sandpipers throughout the summer at Lake Terra Alta, Preston County, West Virginia, fifteen miles from Deep Creek Lake. Sutton suggests (*Cardinal*; Vol. III, No. 5, Jan. 1933, p. 109) that the species may breed sparingly in the Northern Panhandle of West Virginia. This would represent a considerable southward extension of the breeding range given in the 1931 'Check-list.'—MAURICE BROOKS, *West Virginia University, Morgantown, W. Va.*

**The Western Willet on the Niagara River.**—In the late afternoon of August 21, 1936, while watching Yellow-legs and Pectoral Sandpipers around the marshy pools and rock flats along the Niagara River bank south of Fort Erie, Ontario, a Willet suddenly flashed its white-marked wings within twenty paces of where the writer stood with his companion Mr. F. W. Gregory a co-worker in the Canadian Department of Agriculture.

The Willet apparently referable to the Western form (*Caloptrophorus semipalmatus inornatus*) made only a short flight toward the river, and alighted at the edge of the water where it remained while we advanced to a position scarcely twenty five feet from the unsuspecting bird. The very pale brownish grey of the upper parts with faint brown pencilling apparent only through field glasses, or with the naked eye only at the closest point of observation, combined with the uniform pale gray of the underparts, would apparently indicate that it was either a bird of the year, or an adult that had already assumed winter plumage.

While closely observing the Willet in question as it waded out into deeper water and grew uneasy at our persistent and close approach, my companion stated that he

saw a second bird apparently of the same species fly around the bend of the river some distance to the south. This observation however could not be substantiated; but an hour or more search of the vicinity the next day by the writer was rewarded by the sudden appearance of the one, and apparently the same Willet, in exactly the same place and at approximately the same time.

We know of no other recorded occurrences of this large handsome wader on the Niagara River; but there was a report last year by the Buffalo Ornithological Society, in their mimeographed journal 'The Prothonotory,' of another single bird of this species occurring at Crystal Beach, Ontario, a short distance away on the Lake Erie shore, on August 23, 1935.—R. W. SHEPPARD, 1805 Moulton Avenue, Niagara Falls, Ontario.

**Parasitic Jaeger in Connecticut.**—On August 22, 1933, on Fairfield Beach, I observed an unfamiliar bird. I approached it slowly and was able to come within eight feet of it. It resembled a dark young Gull. It rose to its feet and flew off. Especially noticeable were its blue legs. It appeared to be sluggish and not well.

Five days later, on August 27, 1933, it was found dead on the beach. Mr. Frank Novak, of the Fairfield Bird Sanctuary and I identified it as a Parasitic Jaeger (*Stercorarius parasiticus*).

This Jaeger has been recorded in Connecticut only three times before. Linsley notes it from Bridgeport, and it was taken in the fall of 1875, at Portland, Connecticut, by John H. Sage, and in September 10, 1903, by Dr. C. B. Graves at Noank (specimen in the collection of J. H. S.).

The present specimen is now in the possession of Mr. Aretas A. Saunders, one of Connecticut's most prominent ornithologists, who has made a skin of it and added it to his collection at Central High School, in Bridgeport, Connecticut.—JOSEPH BRAUNER, 426 Harrah Ave., Bridgeport, Conn.

**Glaucous Gull in Florida.**—An immature Glaucous Gull (*Larus hyperboreus*) in the white plumage of the second winter was present in Pensacola Bay from March 14 to May 10, 1936. This, apparently the second recorded occurrence for Florida, is substantiated like the first (Howell, Florida Bird Life, 1932) only by photographs. It was through the courtesy of the observer and photographer, Aviation Cadet Robert R. Delareuelle, that prints of the photographs were furnished to the files of the Biological Survey and that I am privileged to record this occurrence.

On March 14, Mr. Delareuelle saw a large white Gull with black-tipped bill at the Naval Air Station, and obtained recognizable photographs of it. On succeeding days, he saw the bird often again and photographed it many times. The photographs show the subject at rest, in flight, alone, and in company with Herring Gulls, this last picture giving an excellent size comparison. After April 5, the Gull disappeared.

Early in May, reports were received of the presence of a "large albino Herring Gull" at a distant point on Pensacola Bay. On May 8, the writer, with Mr. Delareuelle and other observers, followed up these reports and had very satisfactory views of what was presumably the same Glaucous Gull. The bird's constant perch was on the rail of a highway bridge, where it was undisturbed by the frequent passing of cars; but our car, stopping about twenty feet away, immediately put it to flight. In the course of the afternoon, the bird was seen under varying conditions—once in close proximity to an immature Herring Gull, when the much greater size of the Glaucous was easily apparent. It was reported again by other observers on May 9 and 10.—FRANCIS M. WESTON, Naval Air Station, Pensacola, Fla.

**Common Tern (*Sterna hirundo hirundo*) Nesting on Oneida Lake in Western New York.**—In August, 1935, Miss Nettie M. Sadler of Syracuse, N. Y. wrote me of visiting Wantry and Long Islands in Oneida Lake, N. Y. and of the Common Terns that were nesting there. She first visited Wantry Island July 2, 1935, and found a total of forty-two nests with seventy-one eggs and six downy young. On July 11 she visited Long Island. "This was four days after the big storm and the lake was a foot higher and water almost every place on the island." "As we approached we found many adult Terns and we counted twenty-five immature birds swimming very close to the edge of the island. They were beginning to show the black cap. On this island we found seventeen nests with one egg each, two with two eggs each, one with three eggs, one with one downy young and six dead young." They went on to Wantry Island again and this time found ten nests with one egg each, four nests with two eggs each, two nests with three eggs each, two nests with four eggs each, sixteen more eggs in the water and one dead young."

Thus we find a large increase in the number of Common Terns nesting on these islands since 1928 and 1929 as recorded by Dayton Stoner in his 'Ornithology of the Oneida Lake Region; With Reference to the Late Spring and Summer Seasons' (Roosevelt Wild Life Annals, January, 1932).

June 21, 1936, Prof. Hazel R. Ellis, Mr. Paul Erlingback and I visited these islands and found them to be about the same as when described by Stoner. We first visited Wantry, and long before we reached it we could see the Terns flying around above it and alighting to feed their young, and out on the boulders at the west end were about twelve Ring-billed Gulls. On landing we found the nests, a few dead grasses placed in little hollows among the pebbles. There were thirty-one on the island, each with from one to three eggs or one or two eggs and one or two newly hatched young. And there were other young of various sizes up to some with the primaries well started. We found and banded twenty-three of them.

Rowing back about one-half mile to Long Island we saw twenty Black Ducks flying around and then about thirty Herring and Ring-billed Gulls on the boulders at the west end. On the pebbly shore was a Ruddy Turnstone, three Least Sandpipers and six Black Terns. The air above the island was full of milling, scolding Terns and many more arose from the island as we approached. The moment we stepped on shore we began to find the Terns nests. They were placed all along the edges of the grass and some in the grass. Looking out over the island the grass seemed to completely cover it excepting a narrow strip along the shores but there were bare pebbly areas of from one to five or six square yards and in every one of these were from two to six nests. One had to be very careful to keep from stepping on eggs or young Terns.

Our time was limited and after banding the young Terns we did not have time to make a systematic count of the nests. A conservative estimate would be at least 150 pairs nesting on the two islands. We banded fifty-seven young and then ran out of bands and I believe there were at least twenty-five more young birds on the island. While hunting the young Terns Mr. Erlingback caught a fledgling Black Duck which I banded. He saw one more and is sure there was a full family of them hiding in the tall grass.

The only other birds we saw on the Island were a pair of Red-winged Blackbirds (in the rushes), a Bronzed Grackle (flew over), and a pair of Blue-winged Teal which we flushed from the rushes.—VERDI BURTCH, Branchport, N. Y.

**A Record of the Passenger Pigeon in British Columbia.**—The occurrence of the Passenger Pigeon (*Ectopistes migratorius*) is seriously questioned in Brooks and

Swarth 'Distributional List of the Birds of British Columbia' so that the specific mention of the bird in any early book dealing with travel in British Columbia, is worth placing on record. In the work entitled "The North-west Passage by Land—Being a narrative of an Expedition from the Atlantic to the Pacific—Undertaken with the view of exploring a route across the continent to British Columbia through British Territory by one of the Northern passes in the Rocky Mountains—By Viscount Milton, M. P. F. R. G. S. F. G. S. etc and W. B. Cheadle M. A. M. D. Canrab F. R. G. S." at p. 203 of the Seventh Edition appears mention of Pigeons: "Pigeons, wood partridges and pine partridges became very plentiful and we shot them at first in great numbers." The paragraph goes on to describe the different birds and finishes "The pigeon is the beautiful long tailed passenger pigeon so common in the American woods; we found this bird as far west as the sources of the North Thompson."

The first part of the paragraph quoted, from the context had more particular reference to conditions in Western Alberta but the source of the North Thompson is well in British Columbia.

The expedition reached British Columbia in the summer of 1863 crossing the Rocky Mountains by the Yellowhead Pass, present route of the Canadian National Railway.—THEED PEARSE, *Courtenay, B. C.*

**Additional Records of *Neomorphus radiolosus*.**—Recent collections of South American birds acquired by Field Museum through the generosity of Mr. Leslie Wheeler include a pair of Ecuadorian Banded Ground Cuckoos (*Neomorphus radiolosus*). Chapman records but two known specimens of this distinctive species other than the type; one being in the Royal Natural History Museum of Stockholm, the second lately in the Tring Museum. In view of the extreme rarity of this form in collections it is considered advisable to place pertinent facts on record.

The specimens at hand, F. M. No. 100727 ♂ and F. M. No. 100728 ♀, were collected by Carlos Olalla, August 21, 1935, at Montes del Achotal (possibly Arkotal), a locality on the Esmeraldas-Quito road fifteen kilometers south of the woods of Paramba, in the department of Pichincha.

Measurements of the Field Museum specimens approximate those of the type, being: wing, ♂ 162 mm.; ♀ 165 mm.; tail, ♂ 230 mm.; ♀ 240 mm.; culmen, ♂ 50 mm.; ♀ 48 mm.; tarsus, ♂ 70 mm.; ♀ 67 mm. Both birds are in adult or semi-adult plumage, but differ from published descriptions in several minor respects. No olive is apparent either on the abdomen or under tail coverts, nor is the former entirely without buffy bars. Particularly noteworthy is the narrow, though definite and unbroken black band, lacking in the male, which crosses the fore-breast of the female.—EMMET R. BLAKE, *Field Museum of Natural History, Chicago, Illinois.*

**Saw-whet Owl Apparently Nesting in Wisconsin.**—In view of the fact that the Saw-whet Owl (*Cryptoglaux acadica acadica*) is regarded as a very rare breeder in Wisconsin, the following observations are of interest.

I have rented a piece of land some 200 acres in Waukesha County. On it is a lake, probably fifteen acres in area. The land surrounding the lake is well wooded. On the second of June I was skirting the shore a little after sunset. Suddenly a small Owl, no bigger than a Robin, darted at me just missing my head. It repeated this several times, snapping its bill as it came. The only other sound it made was a single, plaintive note, something like the whine of a puppy. The bird was a light buffy brown, streaked with darker brown. I noted very carefully that it had no ear-tufts. It followed me for almost a quarter of a mile, continually darting at my head and snapping its bill.



The next night I returned with a flashlight. The Owl repeated its former maneuvers, only this time it was joined by its mate. I had no difficulty catching it in the flash-light beam, and had an excellent opportunity to note at close range its markings.

I should have collected it as a specimen for a permanent state record, but I was more interested to note whether or not the bird was a breeder. I returned the next morning, but could find no trace of a nest. So far I still have been unsuccessful, but every night the occurrence takes place. So there must be a nest or young in the vicinity.—WALTER J. MUELLER, *Ashbourne Farm, Hartland, Wis.*

**A New Screech Owl from Colombia.**—When studying bird specimens of the Academy of Natural Sciences of Philadelphia, it was noted that two specimens of Screech Owls represented a form not previously described. Therefore they are here characterized as a new race.

***Otus vermiculatus huberi* subsp. nov.**

*Type.*—Adult unsexed, Academy of Natural Sciences, No. 2440, Bogota, Colombia, Rivoli Collection.

*Subspecific characters.*—Similar to *Otus vermiculatus napensis* but ground color of crown and back deep buffy beneath surface and rust red on surface instead of a tawny or hazel brown color; ear-tufts apparently lacking; ground color of under parts buffy instead of whitish; each feather of sides and abdomen with two to three faint bars instead of four or more sharply distinct bars; tail longer, 90 mm. or more instead of 80 mm. or less.

*Measurements of type.*—Total length, 220; wing, 172; tail, 91; culmen, from cere, 13.5 mm.

*Range.*—Bogota, Colombia.

*Remarks.*—Eleven specimens of *Otus vermiculatus* have been examined. The above described form differs from all these in the six characters mentioned above. The second of the two specimens of the new form represents the rufescent phase, the ground color of the upper parts and face being bright cinnamon-rufous. This form is named for Mr. Wharton Huber of the Academy of Natural Sciences.—LEON KELSO, AND ESTELLE H. KELSO, *Washington, D. C.*

**Olive-sided Flycatcher in Virginia.**—On May 5, 1936, three of these birds were seen on Indian Creek in Wise Co., Va., at an elevation of 1700 ft. I observed them at 6:10 P.M. flying out from the tops of a few scattering dead trees on a cut-over hillside. When I first saw them I was too far off to identify them but knew that they were birds I had never seen before. When I got close to them I was agreeably surprised to find out what they were. For the next hour I watched them until the approaching darkness caused them to go to their roosting place. Two of the birds were paired and on the numerous occasions when the other bird would try to join them, it was chased by both of the paired birds. Early the next morning I went back to the same place and soon after I arrived there I saw the pair of birds chasing the other around a point on the hillside and this was the last I saw of them.—F. M. JONES, *Wise, Va.*

**Arkansas Kingbird at Cape May Point, N. J.**—Two Arkansas Kingbirds (*Tyrannus verticalis*) accompanied a flock of about fifty common Kingbirds (*Tyrannus tyrannus*) at Cape May Point, N. J., on September 1, 1936. These two birds were observed at the Witmer Stone Wildlife Sanctuary on the morning of that date. They were unsuspicious and allowed close approach at two different times. They moved



a little independently of the flock, but in general acted with the other Kingbirds. The flock remained in the vicinity until noon, when the west wind died presumably allowing easier crossing of Delaware Bay.—JAMES T. TANNER, *Cornell University, Ithaca, N. Y.*

**Tufted Titmouse in Yates County, N. Y.**—On the afternoon of August 20, 1936, accompanied by Mr. Wm. A. Tuttle of Branchport, the author observed a Tufted Titmouse (*Baeolophus bicolor*) in Potter Swamp, Yates County, New York. The bird was in the company of Redstarts and Black and White Warblers in the branches of a group of willows bordering an abandoned road which crosses the swamp. It was within a rod of the observers a number of times, and we watched it for a quarter of an hour or more. Eaton (Birds of New York) records but half a dozen instances of its occurrence in western New York, and it is considered extremely rare in this region.—CHAS. J. SPIKER, *Branchport, N. Y.*

**Winter Killing of Carolina Wrens.**—In central West Virginia, and in most parts of northern West Virginia, Carolina Wrens (*Thryothorus ludovicianus ludovicianus*) have been, as far back as our records go, among the commonest permanent resident birds. This spring (1936), however, they have practically disappeared over the entire area, and we are forced to the conclusion that the unusually severe winter of 1935-36 virtually wiped out the species here.

Field work has been done this spring and summer in nearly all counties in this territory, and has yielded two records during migration in Monongalia County, one in Upshur County, and one in Marion County; also one June record (presumably a breeding bird) in Preston County. In nearby areas of western Maryland, where the species was formerly common, it has not been noted at all.

The birds were abundant around Morgantown, Monongalia County, until early January, and were noted in the usual numbers during the week following Christmas at French Creek, Upshur County. During late January, however, this section was subjected to temperatures ranging from sixteen to thirty degrees below zero, and after that the species was not again noted until April. One boy in Upshur County found five Carolina Wrens frozen to death, and there were other reports of individuals found dead.

Observations in Kanawha and Boone Counties, both in southern West Virginia, have shown the species to be present there in about the usual numbers. It does not seem possible, however, that the decrease in northern West Virginia could represent merely a fluctuation.—MAURICE BROOKS, *West Virginia University, Morgantown, W. Va.*

**A Peculiar Albinistic Starling.**—For the last two years I have observed on the lawn in front of the bird house in the National Zoological Park an example of a partial albino of the European Starling (*Sturnus v. vulgaris*). In the spring of 1935 I trapped this specimen. Upon examining the bird in the hand I found the entire body to be covered with white feathers, the head, wings, and tail being of the normal color. These white feathers lacked the usual barbules thereby giving the feathers a fluffy appearance.

This bird, which I immediately set free, is again, June 1936, on the lawn in company with about a dozen normally colored Starlings.—MALCOLM DAVIS, *Nat. Zool. Park, Washington, D. C.*

**Warbling Vireo (*Vireo gilva gilva*) Nesting in Alabama.**—A new breeding bird has been added to the fauna of Alabama through the discovery by the writer of

Warbling Vireos nesting at Florence. On May 7, 1936, a male bird alternately sang and scolded while his mate was building the nest in a sycamore tree along the banks of the Tennessee River Canal Lock. The nest, approximately twenty feet from the ground, was apparently about completed at that date.

On July 12 the nest showing signs of having been successfully used was collected by Harold S. Peters, Norman H. Giles, Jr. and me and is now in the collection of the Wild Life Research Laboratory at Auburn. On this same date a singing male and two other Warbling Vireos were observed by the above parties within a hundred feet of the nest tree.—C. RUSSELL MASON, *Sanford, Fla.*

**Brewster's Warbler (*Vermivora leucobronchialis*) in New Hampshire.**—On May 20, 1936, I took a Brewster's Warbler in the plumage of the female, at Concord, New Hampshire; the identification was confirmed by Mr. Ludlow Griscom of the Museum of Comparative Zoölogy. This is I believe the first occurrence of the hybrid reported in this state. The Golden-winged Warbler was taken by W. E. Cram at Hampton Falls in May, 1887, and one was taken at Durham, May 24, 1898 (Allen: *Birds of New Hampshire*, Manchester, 1903). There have been four or more sight records (Jaffrey, Manchester, and Concord).—F. B. WHITE, *Concord, N. H.*

**Prairie Warbler in Dutchess Co., N. Y.**—There is likelihood that the Prairie Warbler (*Dendroica d. discolor*) is definitely extending its range inland in the north-east. Chapman in his latest edition of 'Birds of Eastern North America' states that the bird breeds "casually in Dutchess County, N. Y." and Ludlow Griscom in 'Birds of Dutchess County' calls it an "exceedingly rare summer resident, and very rare transient" and says "that its occurrence in Dutchess County is remarkable even on migration, as there is no known breeding colony north of Dutchess County."

This Spring I observed the Prairie Warbler on seven different occasions. Despite the distinctive song of the bird, each time I heard it (with two exceptions) I hunted it down and studied all its features with a 6x glass to confirm "remarkable" occurrence. It does not seem probable that I saw a "casual" species on seven occasions since this Spring I have myself been more or less too much of a "casual" observer. I did not make daily trips, never was afield for more than half a day (and that long only thrice), and none of the times I saw the Prairie Warbler was I at any of the points in Dutchess County where the bird had been reported previously seen. The seven records follow:

May 7—Manumit School, Pawling.

May 11—Pasture north-east of Manumit School.

May 15—Chippawalla Road, Dover Furnace (heard only).

May 21—Manumit School, Pawling (heard only).

June 3—Manumit School, Pawling (hunted for thoroughly on subsequent days for possible breeding evidence, but no bird observed here again).

June 14—Dover Furnace (with other observers).

June 17—Dover Furnace (with one other observer).

In each case one singing male was observed. In none of these cases was a Prairie Warbler noted twice in the same general locality (Manumit School comprises 177 acres, Dover Furnace sprawls over many square miles), except on June 17 when presumably the same bird was seen that was noted on June 14. A search was made for a nest or a mate, but neither was found. The male observed here sang continuously, seemed very restless even for a Warbler, and in feeding covered a territory too large to suggest that it might have been nesting.—RALPH C. PRESTON, *Hessian Hills School, Croton-on-Hudson, N. Y.*

**Nesting of the Louisiana Water-Thrush in Kansas.**—There seems to be some question of the status of the Louisiana Water-Thrush (*Seiurus motacilla*) in the avifauna in Kansas. In Colonel N. S. Goss's monumental work, 'Birds of Kansas,' published in 1891, he states that the Louisiana Water-Thrush was a common summer resident in the eastern part of the state, arriving the middle part of April and nesting about the 8th of May and remaining late into the fall. There is no question but what Colonel Goss was quite familiar with the habits of this bird. Along the Neosha and Verdigris Rivers he spent a great deal of time, studying the birds and collecting skins, nests and eggs.

My first experience with this bird was in 1893 on Cow Creek east of Girard, Kansas in Crawford County. The following year I was living near the junction of the Marias des Cygnes and the Pottawatomie Rivers in Miami County. These birds seemed to be rather common along the banks of the smaller streams entering into the rivers. However, it was not until May 9, 1897, that I succeeded in securing my first nest and set of four eggs. This nest was situated near the mouth of a small swale entering into the Pottawatomie River. The nest was built on the side of a bank under some overhanging roots and about three to three and one-half feet above the bottom of the ravine. The nest contained four eggs of the Louisiana Water-Thrush and two of the Cowbird. I still have the nest and set of eggs in my possession. During the next four or five years I secured some eight or nine nests in Miami and Linn Counties. No doubt if one would go to these counties they would still find the birds fairly common in suitable localities.—WALTER COLVIN, *Walpey Bldg., Arkansas City, Kas.*

**Summer Tanagers again Destroy Wasp Nests.**—The Summer Tanagers (*Piranga r. rubra*) are back again and at their old tricks. Soon after I first saw them (June 10, 1936) I found two wasp nests lying on the cement terrace within a foot or so of the wall of the house. One comb contained only about a dozen cells; the other was about two inches in diameter. Neither one was provided with a cover. The larger comb contained several living grubs, and the cell walls on one side were broken. These nests may have fallen from beneath the wide eaves of the house, but the point where they were lying was not more than ten feet from the nest in the pine tree, which was destroyed by the Tanagers last June (Auk, 1936, p. 220).

A few days after finding these nests I observed the female Tanager at work on another side of the house. She was on the ground and I was standing about twenty-five feet away in full view. She was at first making repeated efforts to get the seeds of some grasses which were about a foot tall—making short flying leaps; or that is what I thought at first she was doing. But then she made similar leaps into the ivy which clung to the wall at that point.

She made no attempt to cling to the ivy, but fell back to the ground each time. After the last leap she flew away as if she had accomplished her purpose, and not because she was disturbed in her work. I then examined the spot in the ivy where she had been working and found a wasps' nest under a cluster of ivy leaves and about a foot from the ground. The cover of the nest was turned off and lying in the grass beneath. The comb—about three inches in diameter—was somewhat torn and contained many living grubs. Later I found the nest pretty thoroughly destroyed and no grubs remained in what was left of it.

Of course I have no means of identifying individuals and my only reason for referring to this pair as if they were the same as those concerned in the incident reported of last June, is that they seemed thoroughly at home on the day of their first appearance and had no need of working up a familiarity with the premises.—J. I. HAMAKER, *Randolph-Macon Woman's College, Lynchburg, Va.*

**Eastern Summer Tanager in Colorado.**—On May 12, 1873, a specimen of the Eastern Summer Tanager (*Piranga rubra rubra*) was collected by Mr. H. W. Henshaw, near Denver, Colorado. In the account of this specimen (Report upon Geographical and Geological Explorations and Surveys West of the One Hundredth Meridian, Vol. V, p. 239, 1875), it was reported and classified with a specimen of *P. r. cooperi* Ridgway, from the Gila River, Arizona. The dimensions given for the Denver specimen were typical of those of the eastern subspecies, however, being much smaller than those of the Gila River specimen collected on the same survey. The latter was evidently a Cooper's Tanager, but the former was not.

This error was pointed out in 1917 by Dr. H. C. Oberholser, who, upon examining the Denver specimen (No. 72,085 in the U. S. National Museum collection), pronounced it a "perfectly typical immature male" specimen of *Piranga rubra rubra*. (Proc. Biol. Soc. Wash., 30: 122, 1917.) Through some oversight, this correction was not incorporated in the fourth edition of the A.O.U. 'Check-list of North American Birds'. Consequently, the subspecies therein given for Colorado is *P. r. cooperi*, which is listed as "casual." Inasmuch as there is no record of Cooper's Tanager for the state, this reference to its occurrence should be deleted. On the basis of Mr. Henshaw's specimen, and an additional one mentioned herein, the Eastern Summer Tanager should be recognized as "accidental" in Colorado; in the latest 'Check-List' its occurrence in the state is not mentioned.

On May 1, 1936, while conducting a class of twenty-five ornithology students on a field trip in the Boulder Creek bottoms, the entire class was treated to a good view of a Summer Tanager. The bird, which was in a moderately close stand of cottonwoods and stream-side shrubs, was somewhat shy, but was observed for several minutes from a distance of about twenty yards. Several hours later, with Mr. Wayne Moody, a member of the class, I returned to the same locality and was successful in finding and collecting the specimen. It proved to be an adult male having the following dimensions (millimeters) in the flesh: total length, 184; wing, 95; tail, 70; exposed culmen, 17; gape, 22; tarsus, 18. In coloration, it is typical of the adult male of the eastern subspecies. The bill profile was compared with Ridgway's figures accompanying his description of *Piranga Cooperi* (Proc. Acad. Nat. Sci. Phila., 1869, 130), and found to correspond to that of *Piranga aestiva* Vieillot, a synonym of *Piranga rubra rubra* (Linnaeus). The specimen therefore constitutes a second record of *P. r. rubra* for Colorado. It has been mounted, and is now No. 3305 in the bird and mammal series of the University of Colorado Museum.

After collecting the specimen, I learned that an "all red" bird, later identified as a Summer Tanager, had been seen and closely observed two days earlier within a half-mile of the place at which the specimen was collected. One of the observers was Mrs. E. C. Smith, of the Museum staff. Presumably this was the individual later collected. No other individuals of the species were seen or reported.—GORDON ALEXANDER, *Department of Biology, University of Colorado, Boulder, Colorado.*

**Brewer's Blackbird taken Near Toledo, Ohio.**—On April 12, 1936, I collected a female Brewer's Blackbird (*Euphagus cyanocephalus*) from a group of three males and two females in Spencer Twp., Lucas County, Ohio. These birds were accompanied by two or three starlings. As far as I can determine, this is the first time that Brewer's Blackbird has ever been taken in Ohio. The skin is No. 6981 in the collection of the Ohio State Museum.—LOUIS W. CAMPBELL, *Toledo, Ohio.*

**Brewer's Blackbird (*Euphagus cyanocephalus*) in Alabama.**—On March 23, 1936, in a pasture nine miles east of Foley, Alabama, and within six miles of the



Florida line, approximately fifty Blackbirds were seen feeding about a number of hogs. Characteristically unsuspicious, they were easily approached and readily identified as Brewer's Blackbirds. As there was no previous record for the occurrence of this species in the State it was felt advisable to substantiate it with an actual specimen, and a single bird, a female in rather worn plumage, was taken. This Blackbird has likewise apparently never been definitely recorded in Florida, but in view of its relative abundance in recent years in western North Carolina (The Wilson Bulletin, XLV, pp. 111-113) it should prove to be a fairly common migrant not only in Alabama but in northern Florida as well.—THOS. D. BURLEIGH, *U. S. Biological Survey, Gulfport, Mississippi*.

**Agelaius humeralis a new bird for North America.**—In the course of my bird banding operations there were trapped at my station at Key West, Florida, two black birds, at the time unfamiliar to me. They proved to be Tawny-shouldered Blackbirds (*Agelaius humeralis* (Vigors)) which species is native to the island of Cuba, and has also been found on Haiti. These individuals were taken on February 27, 1936, on the Key West Lighthouse Reservation. They had been about for several days associated with Red-winged Blackbirds, of which there was a considerable number present at that time. They were kept in captivity until April 7, when they were shipped alive to the Biological Survey at Washington, D. C. There the previous tentative identification as *Agelaius humeralis* was confirmed by Dr. Harry C. Oberholser of that Bureau. They have been deposited as specimens in the Biological Survey collection in the United States National Museum, as proof of the record.

So far as we know this is the first occurrence of this species in the United States, and, of course, in North America, and these two specimens therefore form a very interesting addition to the North American avifauna.—WILLIAM W. DEMERITT, *United States Lighthouse Service, Key West, Florida*.

**Eastern Henslow's Sparrow Breeding in West Virginia.**—In a previous note (Auk, Vol. LIII, p. 91, Jan. 1936) we, together with James T. Handlan, Jr. and A. S. Margolin, recorded the collection of the first West Virginia specimen of Eastern Henslow's Sparrow (*Passerherbulus henslowi susurrans*). As the bird was taken in October, there was no evidence of its having bred in the state.

Since that time however a careful search has been made for summer residents of this species. On July 19, 1936, we were collecting in the neighborhood of Burlington, Mineral County, in some broad sedgy meadows along Patterson's Creek. Our attention was called to the "che-slick" notes of Henslow's Sparrows, and we found adults with at least three young. Since the young birds were still in juvenal plumage it seems a fair assumption that they must have been raised close-by.

The fields where these Sparrows were found lie at the foot of the "Alleghany Front." Conditions are decidedly Carolinian however. The previously collected specimen was from Preston County, on top of the Alleghany Plateau about fifty miles west of the Mineral County locality.—MAURICE BROOKS, KARL HALLER, *West Virginia University, Morgantown, W. Va.*

**Lincoln's Sparrow and Lark Sparrow in the Northern West Virginia Panhandle.**—In my list of the birds of the northern West Virginia Panhandle (Cardinal, Vol. III, No. 5, January, 1933, 101-124) I do not name either the Lincoln's Sparrow or the Lark Sparrow. It is therefore desirable for me to report that on April 28, 1936, I collected a male Lincoln's Sparrow (*Melospiza l. lincolni*) along

Buffalo Creek at Bethany, Brooke County; and that on May 2, 1936, Messrs. Edward Addy, Russell De Garmo and myself took a female Eastern Lark Sparrow (*Chondestes g. grammacus*), on the De Garmo farm about half a mile north of Fowlertown, Brooke County. These specimens are, to the best of my knowledge, the first of their respective species to be taken in the northern West Virginia Panhandle. Both are in my private collection at Bethany. The ovary of the Lark Sparrow was considerably enlarged, but no male bird was noted in the vicinity.—GEORGE MIKSCH SUTTON, *Bethany, West Virginia*.

**Lincoln's Sparrow in Wise Co., Va.**—On May 7, 1936, on Indian Creek in Wise Co., Virginia, I saw a Lincoln's Sparrow (*Melospiza l. lincolni*), it was in a growth of briars and sumac on a hill side at the foot of the mountain. As it did not seem inclined to leave the cover of the thicket, I got within twenty feet of it. It was seen in the same place on the following day.—F. M. JONES, *Wise, Va.*

**Lapland Longspur (*Calcarius lapponicus lapponicus*) in Central New York in April.**—April 19, 1936, I was driving over the hills in western Yates County, N. Y., and at an elevation of 1240 ft. came to a shallow pond in a field. We had had a very wet season and water had settled in a depression near the road. Here I found a flock of at least 200 Lapland Longspurs busy feeding around in the weeds that were still standing around the pond. Most of them had changed into their summer plumage. In a few moments there were up and away.

There seems to be another April record for western New York: 150 seen near Geneva, April 19, 1934, by G. Van Esseltine (Auk, October, 1934).—VERDI BURTCH, *Branchport, N. Y.*

**Lapland Longspurs noted in West Virginia.**—On March 7, 1936, the writer, accompanied by Dr. H. L. Knowlton, of West Virginia University, and Misses Henrietta and Nancy Leith, of Charleston, W. Va., visited the Federal Homestead Project at Red House, Putnam County, W. Va. Large flocks of Horned Larks and a few Pipits were feeding along the bottomlands of the Great Kanawah River. Our attention was called, however, to two unfamiliar birds, and when we examined them carefully they proved to be Lapland Longspurs (*Calcarius lapponicus lapponicus*).

They were feeding between the furrows of a plowed field, and allowed close approach, where we studied them with 8x glasses. They made short flights, whistling as they flew.

So far as I am aware, there are no previous West Virginia records for the species, although it might be expected more or less regularly in migration and in winter in the Ohio Valley. Comparatively little work has been done on the land birds of this territory, and our observation emphasizes the need for more study in southwestern West Virginia.—MAURICE BROOKS, *West Virginia University, Morgantown, W. Va.*

**Sanderlings and a Marsh Hawk wintering in New Hampshire.**—On January 2, 1936, the following birds of special interest were noted at Hampton Beach, Hampton, New Hampshire:

*Crocethia alba*. SANDERLING.—Two birds were observed, at close range, as they fed along the sandy sea-coast. According to available information, there is no New Hampshire winter record for this species. In Massachusetts the Sanderling is an irregular winter resident north of Cape Cod.

*Circus hudsonius*. MARSH HAWK.—The winter records of this bird seem to be sufficiently scarce to record a male Marsh Hawk, we saw flying over a coastal marsh not far from the point where the Sanderlings were seen.—EUGENE J. GOELLNER AND MAURICE PROVOST, *St. Anselm's College, Manchester, New Hampshire*.

**Recent Records of some Uncommon Michigan Birds.**—On account of their rarity in the state it seems desirable to place on record the following specimens, all of which are preserved in the University of Michigan Museum of Zoology.

*Dryobates pubescens nelsoni*. NELSON'S DOWNY WOODPECKER.—I took a male at Whitefish Point, Chippewa County, on May 20, 1936. The wing measures 101.5 mm., and the tail is only lightly marked with black. Although the late date suggests the possibility of the bird's breeding in the vicinity, it was probably only a migrant, for its gonads were small, and such northern breeders as Snow Buntings (*Plectrophenax n. nivalis*) and Northern Horned Larks (*Otocoris a. alpestris*) were still about. This is the first record for the present subspecies in Michigan.

*Otocoris alpestris hoyti*. HOYT'S HORNED LARK.—Five males were collected from a large flock of *alpestris* and *praticola* near Ann Arbor by Dr. Max M. Peet, Thomas D. Hinshaw, and myself on February 22, 1934.

*Parus hudsonicus hudsonicus*. HUDSONIAN CHICKADEE.—I obtained six specimens at Whitefish Point on May 15 and 16, 1936.

*Zonotrichia leucophrys gambelii*. GAMBEL'S SPARROW.—A female was secured from a flock of White-crowned Sparrows (*Z. l. leucophrys*) at Whitefish Point on May 19, 1936. Its weight, 23.5 grams, is considerably less than that of *leucophrys*. Five Michigan White-crowns collected during May varied in weight from 26.7 to 32.9 grams, with the average 30.8 grams.—PIERCE BRODKORB, *Museum of Zoology, Ann Arbor, Mich.*

**Some Notes from Arkansas.**—*Mareca americana*. BALDPATE.—A group of two males and two females was seen in Fourche Loupe Basin of Lake Hamilton in this county on April 5, 1936, and again the following day. This Duck has been observed at Stuttgart in 1889–90, Mud Lake and Turrell in 1910 and at Big Lake in 1910.

*Rallus elegans elegans*. KING RAIL.—A local hunter killed one December 22, 1935, and the mounted specimen is now on display at the shop of a local taxidermist. It was taken in the Mountain Valley section, about twelve miles north of Hot Springs. The bird was alone in a low field and near a fence row where it was flushed by a dog and attracted the hunter's attention by its alarm note as it arose. It has been reported from Eureka Springs and Stuttgart in this state.

*Pluvialis dominica dominica*. GOLDEN PLOVER.—A flight of five and a pair were observed feeding on a bare beach on Lake Hamilton on March 28, 1936. On March 31, six, including a group of three, a pair and a single, were flushed from the grass near the lake. April 3, two pairs and a single were seen in a field bordering the lake and one, a male, was collected. April 5, a single and a pair; April 6, two singles and a pair; April 8, a pair; April 11, a single and a pair; and April 14, two singles were observed in the same general locality. This species has been reported in Arkansas only from Crockett's Bluff in 1882 and from Fayetteville in 1883.

*Catoptrophorus semipalmatus semipalmatus*. EASTERN WILLET.—On May 3, 1936, nineteen were sighted, resting on a stony point on Lake Hamilton, with three Ring-billed Gulls. Two, a male and a female, were collected and a third was wounded which flew out over the water and dropped and though I went to a nearby landing and secured a boat I was unable to recover it. May 10 two were seen. One flushed readily; the other ran at a rapid gait but could not be put to wing until I followed it to a point of land when it flew fifteen feet and dropped into the water. This was evidently the bird I had wounded the week before and it would be interesting to know whether the sound bird had remained from the flock to be with the wounded one. On May 18, in the same locality, I flushed a single bird which flew normally. This species has never been reported from Arkansas.

*Troglodytes aëdon parkmani*. WESTERN HOUSE WREN.—A specimen was secured from a thicket near Lake Hamilton on April 14, 1936. This species has been reported from Winslow, Helena, Turrell, and other localities.

*Anthus spinoletta rubescens*. AMERICAN PIPIT.—A lone specimen was taken near Lake Hamilton, April 3, 1936. This species has been reported from Lake City, Van Buren, Tillar and Fayetteville in Arkansas.

*Oporornis agilis*. CONNECTICUT WARBLER.—A single specimen was observed April 28, 1936, as it fed in a thicket of blackberry and scrub oak near Bull Bayou. In this state it has been observed only at Fayetteville, May 22, 1926, and October 14, 1928.

*Wilsonia pusilla pusilla*. WILSON'S WARBLER.—A male specimen was collected May 3, and a female, May 18, 1936. It has been reported in Arkansas from Winslow, Fayetteville and Helena.

*Spinus pinus pinus*. NORTHERN PINE SISKIN.—On March 30, 1936, several were seen feeding in the company of Purple Finches and Goldfinches in the top of an elm tree. Two specimens were collected. This species is rare in the state, having been reported only from Mena in 1910 and from Winslow in 1914.

*Melospiza melodia juddi*. DAKOTA SONG SPARROW.—One was taken in a field near Lake Hamilton on April 15, 1936. The identification was kindly made for me by Dr. Herbert Friedmann of the U. S. National Museum. This species has never been reported from Arkansas.—WILLIAM H. DEADERICK, 36 Circle Drive, Hot Springs, Ark.

**New Bird Record for St. Croix, V. I.**—*Haematopus* sp. OYSTER-CATCHER.—A specimen was collected on April 1, 1934; a pair was seen on the reef off Tagus Bay and one of the birds shot by Albert Nelthropp, Jr. Unfortunately the specimen was lost somewhere in the heavy brush encountered on the return journey from the bay. Seaman tells me that he believes a pair of large birds seen by him in November, 1933, were Oyster-catchers. They were on the reef at Salt River, were very wild, and flew off before he could get a good look at them through his binoculars.

*Pisobia fuscicollis*. WHITE-RUMPED SANDPIPER.—A flock of twelve was seen on June 5, 1933, on the mud flats of Krause Lagoon. The birds were among other species of Sandpipers and were very shy. On September 11, 1933, a single bird was observed along the edge of South Gate pond with a flock of Semipalmated Sandpipers (*Ereunetes pusillus*).

*Gelochelidon nilotica aranea*. GULL-BILLED TERN.—The occurrence of the species was recorded on the following dates and localities:

4—Frederiksted's harbor, October 22, 1933.

8—Krause Lagoon, June 20, 1934.

6—Salt Pond, July 14, 1934.

10—Krause Lagoon, July 17, 1934.

4—Krause Lagoon, August 13, 1934.

*Gymnasio nudipes newtoni*. BARE-LEGGED OWL.—I believe it is of more than passing interest to record the rediscovery of this little Owl on St. Croix, especially since the species appears to be also rare in its former haunts among the neighboring islands. Owls were of common occurrence some twenty-five years ago, as related to me by the older natives. The years following that period saw, what I now believe to be, the nearly complete extermination of the species although I held an opinion, previous to October 16, 1934, that they were forever gone from St. Croix. During the night of that date I heard the drawn out rolling song of my first bird while collecting in the wooded section of Caledonia. Since that time I have recorded the species,



through their rolling song and varied calls, from Caledonia, Crique, and Mt. Eagle, but not until recently did I have an opportunity to collect a specimen. A male was collected, while in song, on the night of April 6, 1936, Crique woods. The sex organs were greatly enlarged; the stomach contained an entire frog (*Eleutherodactylus lentus*).

*Dendroica coronata*. MYRTLE WARBLER.—A male Warbler, apparently in full spring dress, was observed on March 30, 1935. It was first noticed actively capturing flies in a large Bourgainville spread where it remained for several minutes then flew away and was not seen again. This observation, at close range, was made in a garden in the town of Frederiksted, along the ocean front.

*Chordeiles m. minor*. NIGHTHAWK.—During the early afternoon of October 4, 1933, a female of this species was collected at estate Anguilla by George A. Seaman. Seaman very kindly gave me the skin which I presented to Mr. James Bond, the Academy of Natural Sciences, Philadelphia. Seaman observed the bird sitting lengthwise on a low branch and noted particularly the unconcealed location. It is easy to believe that Nighthawks occur more or less regularly on many of the islands but from lack of material we have no knowledge of the forms that may be expected. I have recorded Nighthawks (*Chordeiles* sp.) on the wing for dates and localities as follows:

10—Anguilla pastureland, late afternoon, October 4, 1933, observed by George A. Seaman.

2—Constitution Hill, at dusk, October 6, 1933.

1—South Gate, at dusk, October 6, 1933.

2—La Grange pastureland, October 8, 1933.

8—Barren Spot cane fields, October 12, 1933, about five o'clock in the afternoon; the birds were high up and circling while drifting westward.

1—La Grange pastureland, July 14, 1934, it was about ten o'clock, the valley brilliantly lighted by a full moon, and the white markings of the bird's wings could clearly be seen.

1—Cane Garden, at dusk, July 26, 1934.

HARRY A. BEATTY, *Christiansted, St. Croix, Virgin Islands, U. S. A.*

**Two New Records for Panama.**—*Dendrocygna bicolor bicolor* (Vieillot). An adult of this species was shot by Mr. Karl Curtiss on the fourteenth of June, 1936, in La Jagua swamp, six miles south of Pacora, Panama. Formerly the farthest north it has been recorded is from Bogota in Colombia.

*Belonopterus chilensis cayennensis* (Gmelin). Mr. Curtiss collected an adult of this form on May 17, 1936, also from La Jagua swamp. Previously it has never been recorded north of the Atrato River, Colombia.

Pacora is situated on the Pacific slope of Panama, about seven miles inland from the coast, between Panama City and the Rio Chepo.

These two birds are now in the collection of the Museum of Comparative Zoology, and catalogued under the following numbers:

*Dendrocygna bicolor bicolor*, M.C.Z. No. 171774

*Belonopterus chilensis cayennensis*, M.C.Z. No. 171772

Mr. Curtiss has for many years collected archaeological material for the Peabody Museum at Harvard University, during his vacations. He is also an ardent hunter and very interested in the bird life of Panama; consequently, when he saw these two strange birds he knew at once that they were not indigenous to Panama. So he shot them and sent the skins to Mr. James Zetek, an invaluable friend to visiting scientists in Panama, and superintendent of Barro Colorado Island. Mr. Zetek forwarded the

skins to the Museum of Comparative Zoölogy, at Harvard University.—JOHN A. GRISWOLD, JR., *Museum of Comparative Zoology, Cambridge, Massachusetts.*

**Vireo nelsoni** Bond.—In my paper on the systematic position of the genus *Lawrencina* and *Laletes* (Proc. Acad. Nat. Sci. of Phila., Vol. LXXXVI, 1934, pp. 399-402), I united the former with the genus *Vireo* and, in a footnote, proposed the name *Vireo nelsoni* for the Michoacan Vireo (*Vireo nanus* Nelson). I omitted, however, to give a definite published reference as required under Article 25 of the International Code. The basis of my name *Vireo nelsoni* is *Vireo nanus* Nelson, Proc. Biol. Soc., Wash., 12, p. 59, 1898, Type, from Querendaro, Michoacan, Mexico, in collection of U. S. National Museum, Washington, D. C.—JAMES BOND, *Academy of Natural Sciences of Philadelphia.*

# RECENT LITERATURE.

## Mathews on the Birds of Norfolk and Lord Howe Islands and New Zealand.

—Some years after the completion of his 'Birds of Australia' Mr. Mathews published a volume uniform in every way with that great work but dealing with the birds of Norfolk and Lord Howe Islands. As a matter of fact it also contained much supplementary matter on the birds of Australia and was in many respects a supplement to this large work. Now there appears another volume entitled a 'Supplement'<sup>1</sup> to the last publication and containing also such of the birds of New Zealand as were not figured by Buller. This too is uniform with the 'Birds of Australia' and contains much supplementary matter on the birds of that continent, so that both of these volumes really belong to the same series and should form part of any complete set. With this publication, Mr. Mathews writes us, that he "says farewell to Australian birds having fulfilled my claim to figure every species in the Australian list and my thirty years constant work on this region is completed." He is now, by the way, busy on his monograph of the Petrels.

The supplement proper covers twelve pages and nine plates (with an additional figure on Plate 83 of the New Zealand section). Two of these are colored plates representing the extinct White Porphyrio and the Gray-headed Blackbird, the others are reproductions of drawings of generic characters. Then follows 'Additions to 'The Birds of Australia' covering fifty-eight pages and twenty plates, nineteen of the latter are colored plates and one a half-tone of two of the Lambert drawings upon which some of Latham's species were based. The text consists of all sorts of additional matter relating to species contained in the original work.

Part two of the volume consists of the supplement to Buller's 'Birds of New Zealand' with 165 pages of text and twenty-eight plates (counting here the one containing a Norfolk Island figure mentioned above). Among the interesting species here figured is the Campbell Island Duck (*Xenonetta nesiotis* Fleming), the original of which Mr. Fleming kindly showed to many of us at the last meeting of the A. O. U. at Toronto. The colored plate is from a painting by T. M. Shortt. We note that on the plate the generic name appears *Zenonetta* thereby adding a synonym to an extinct genus. Incidentally it might be mentioned that there are colored plates of the Red and Northern Phalarope, the Pectoral Sandpiper, Hudsonian Godwit and Arctic Tern, all birds of the North American list which reach New Zealand in their migrations.

When he had completed the twelfth volume of his great work on the 'Birds of Australia' we had occasion to congratulate Mr. Mathews and to express our appreciation of the splendid contribution that he had made to the ornithology of the Antipodes and we can do no more than refer our readers to that review (Auk, 1927, p. 435). We should again emphasize, however, that this and the immediately preceding volume are definitely a continuation of that work and no set is complete without them even if, for publisher's reasons, a separate title had to be used.—W. S.

**Ardley on the Birds of the South Orkney Islands.**<sup>2</sup>—During January 1933, the Royal Research Ship, 'Discovery II,' was engaged in a hydrographic survey of

<sup>1</sup> A Supplement | to the | Birds | of | Norfolk & Lord Howe Islands | to which is added those | Birds of New Zealand | not figured by Buller | by | Gregory M. Mathews | Author of "The Birds of Australia" | With Hand-coloured and Monochrome Plates | H. F. & G. Witherby, Ltd. | 326 High Holborn, London | 15th. July 1936. Pp. 1-xiv + 1-177. Price £8. 8s.

<sup>2</sup> The Birds of the South Orkney Islands, by R. A. B. Ardley, R. N. R. Discovery Reports, vol. XII, pp. 349-376, plates X-XII, Cambridge, 1936.

the South Orkney Islands. In February she made a second brief visit to Coronation Island of the group. Mr. Ardley, of the expedition party, made the most of these periods, despite pressure of other work, and has given us the first general account of South Orkney birds since the observations of the 'Scotia' party, which were published in 1906.

Twenty-one species are discussed, six of these being illustrated by reproductions of extraordinarily fine photographs. Two or three of the birds are, however, included upon what seem doubtful data, and the listing of *Sterna hirundinacea*, which appears to be associated with the South Orkneys only as a result of misidentification, shows how tenacious is tradition.

In his excellent notes on Penguins, the author is incorrect in doubting that *Eudyptes chrysolophus* is a breeding bird at the South Orkneys, for Larsen long ago discovered colonies at one or more of the islets. His field notes confirm current opinion regarding the extraordinary pugnacity of the Ringed Penguin, which does not tolerate even the Sheathbill near its nest. Ardley estimates the mortality of young Adélie Penguins to amount to 50 per cent; Giant Petrels and Sheathbills, he notes, were never seen to attack a healthy Penguin chick, an important comment with reference to the beneficent role of predators in maintaining the vigor of an animal population. Not a single weakling young Penguin on the other hand, has the slightest chance of survival. Other observations on Penguins include a detailed description of the swimming technique of the Adélie, and notes on specific (as distinct from seasonal) differences in the color of the excreta, doubtless resulting from small divergences in diet.

The accounts of the resident Petrels are equally entertaining and significant. Among breeding Giant Fulmars about 10 per cent of the population is made up of white birds, the proportion being considerably higher among downy young. Ardley errs in inferring that the china-blue iris of some of the South Orkney adults has not been observed at South Georgia. He found that the Cape Pigeon and other cliff-dwelling Petrels never occupy exposed southward-facing precipices, on which the coldest snow-bearing winds strike. Notable among the discoveries of the expedition is the fact that the South Orkneys are the West Antarctic headquarters of *Priocella antarctica*. Hitherto this Petrel had been merely assumed to breed at this group, but Ardley reports a total of not less than half a million nests at the Inaccessible Islets, off the western end of the archipelago. The downy plumage and flesh colors of the nestling of this species are for the first time adequately described.

The climatic disadvantages at the South Orkneys for such birds as *Pachyptila desolata* and Wilson's Petrel, which nest more successfully in the milder environment of South Georgia, are pointed out with emphasis, both of these species having to overcome an enormous mortality rate of the young. The biography of Wilson's Petrel is highly specific and useful in its description of the regularity in the date of annual return to the islands, the relatively great length and irregularity of the breeding season, and the courtship of this small Petrel in the open.

The true South Polar Skua (*macormicki*) is no more than a straggler to the South Orkneys, as indicated by the 'Discovery' investigations as well as earlier accounts. Ardley regards it as highly improbable that the low Antarctic form of the Skua (*lönnerbergi*), which is the common resident sub-species, lives a pelagic life during the winter, when it is absent from the breeding grounds. The reviewer believes this to be a scarcely warranted assumption. Skuas are common on the high sea in sub-antarctic latitudes during the winter, and all of the northern hemisphere representatives of the family are almost exclusively pelagic during the non-breeding season.



With reference to the Antarctic Tern (*Sterna vittata*)—the only breeding tern of the South Orkneys, since *Sterna hirundinacea* is confined to South American littoral waters—it seems that the author has used the subspecific name *georgiae* somewhat rashly. He states that only one specimen was collected; no measurements are given, and there is no indication that a comparison has been made with South Georgian examples, which are at least likely to prove to be endemic at that single island.

The final life history gives us the first definite and objective description of courtship, or connubial behavior, of the Sheathbill. Ardley's observations lead, also, to the conclusion that the rather extensive migrations of this curious bird are made without any ingestion of food during its flights from land to land.

This contribution, added to Matthews's account of the birds of South Georgia, Hamilton's study of the sub-antarctic Skuas, etc., gives ornithology a high place in the notable 'Discovery Reports,' which have now reached 13 volumes.—ROBERT CUSHMAN MURPHY, *American Museum of Natural History*.

**Sutton's 'Birds in the Wilderness.'**—Those who have read Dr. Sutton's 'Eskimo Year' are aware of his ability to write entertainingly of his experiences and they will find a wealth of good reading and personal anecdotes as well as much ornithology in the interesting book<sup>1</sup> that he now offers to the public. He begins with a brief account of his own early life—in Nebraska, Minnesota, Oregon, Illinois, Texas and West Virginia, and the circumstances which led his ornithological career. Then follows a delightful chapter on Louis Agassiz Fuertes who gave him instruction and inspiration in his bird painting—a field in which the student has certainly realized the hopes of his teacher! Other chapters describe the author's many trips in search of bird lore to James Bay, Labrador, British Columbia, Churchill, Oklahoma, southern Florida and interior Louisiana, with sketches of the habits and personalities of familiar birds nearer home. The Turkey Vulture, Blue Goose, Roadrunner, Chimney Swallow are among the numerous species of which the author writes sympathetically, while he also tells us of many bird pets, notably Owls and Ravens. Poe, he considers, was no ornithologist and his Raven was "a monster, a fiend, and a hybrid creature of blasted soul."

Dr. Sutton tells us that "ornithologists are not good conversationalists. They do not care to talk about anything but birds; and when they talk they must needs continually toss off such formidable terms as 'pileated' 'semipalmated,' 'flamulated,' etc.," but in his little book he proves the error of his statement, for one finds much of interest in 'Birds in the Wilderness' that is not ornithology and the ornithology is presented in a way that everyone can understand and enjoy. There are twelve illustrations by the author, of which several are in color, while several others illustrate juvenal plumages in depicting which Dr. Sutton excels. We heartily recommend 'Birds in the Wilderness' to all who love wild life and experiences afield.—W. S.

**Peattie's 'Green Laurels.'**—When one looks over the "Contents" of this notable book<sup>2</sup> he infers that it is a series of biographies of naturalists but he soon finds that it is far more than that. As the author himself says: "I am telling about the great naturalists not simply from a biographical point of view; these men are the

<sup>1</sup> Birds in the Wilderness | Adventures of an Ornithologist | By George Miksch Sutton Illustrated | by the author, with pencil drawings | and field-sketches in color made | from living or freshly killed birds | . New York | The Macmillan Company | 1936. Pp. i-xiv + 1-200. Price \$3.50.

<sup>2</sup> Green Laurels | The Lives and Achievements | of the | Great Naturalists | Donald Culross Peattie | Author of "Singing in the Wilderness" | and "An Almanac for Moderns" | Simon and Schuster, 386 Fourth Ave., New York 1936. Pp. i-xxiii + 1-368. Price \$3.75.

windows, so to speak, through which I want to reveal the great scene that occupied them all—nature itself. The real hero of the book is man's mind as it is concerned with nature." Furthermore we at once realize that this book is literature, and literature of a high order, for Mr. Peattie's gifted pen has the ability to tell us just what he has in mind in a style that holds our interest to the very end. There have been masters of literature who have written of nature and naturalists but all too often their own natural history has been at fault, but Mr. Peattie has been a naturalist before he became an author while one of his earliest works was a technical one: 'Flora of the Indiana Sand Dunes.' He possesses also a good knowledge of American ornithology. The fifteen chapters of 'Green Laurels' treat of the "Schoolmen" and "Herbalists"; of Buffon and Reaumur; of Linnaeus; Cuvier and Lamarck; Bartram and Michaux, Wilson and Audubon; Say and Rafinesque; Goethe, Darwin and Wallace, and Fabre.

We have space to consider but one chapter, the "Wilderness Birdsmen: Wilson and Audubon." This to our mind is the best estimate of the relative standing and personal characteristics of the two men that we have ever read. Our author admits that he once gave himself license to admire and love Audubon boundlessly "but I am come this time," he writes, "to give the older man, the less lucky pioneer of American ornithology, his due." He shows us that when we look upon bird life through Wilson's eyes we look with the eyes of the poet while through Audubon's we look with the eyes of the artist. It is ridiculous to consider the two as rivals and, in many ways, impossible to compare them, as the work of one was finished ere that of the other had really begun. As we have always contended there is no question as to which was the pioneer and, as Mr. Peattie truly says, Wilson "left very few birds in all of eastern North America for any newcomer to discover" and furthermore as he tells us the European scientists had the skins and bones from which to draw up descriptions but they knew nothing of the glory of New World bird life which Wilson's "gift of the fresh eye, the poet's quickness of ear" were destined to furnish. "The early European naturalists were necessarily deprived of the very spirit of the whole subject and what we lacked before Wilson's day was some Gilbert White, some patient adoring amateur who would think nothing too small to set down. Indeed ornithology cannot for a moment dispense with a whole chain of Gilbert Whites." As our author puts it, "ornithology is an amateur's science" and he lets "museum men roll their eyes and groan" the while! We do not groan, however, and we agree that "bird study in the field" is largely an amateur study and that ornithology in many of its branches is dependent upon just such study but there would seem to be another side to ornithology which is just as much professional science as others that are mentioned in 'Green Laurels.' Mr. Peattie very properly eliminates poor Wilson from the controversy between Ord, Waterton and Audubon, which occurred long after his death, and also very properly characterizes it as disgraceful.

"The Wilderness Birdsmen" is but one chapter in this fascinating Book and there is much side light upon ornithology in several of the others while ornithologists, and others as well, will wish to read the whole work through and will then appreciate the author's idea in writing it. There are many excellent photogravure illustrations and a good bibliography of "sources and reference material."—W. S.

**Clarke on 'Fluctuations in Numbers of Ruffed Grouse.'**—In an excellently written and handsomely printed brochure<sup>1</sup> Mr. Clarke has presented the results of

<sup>1</sup> *Fluctuations in Numbers of Ruffed Grouse, Bonasa umbellus (Linne), with special reference to Ontario.* By C. H. Douglas Clarke. University of Toronto Studies. Biological Series, No. 41, 1936. Pp. 1-118, Price \$1.00.

an investigation carried on by him in the Department of Biology of the University of Toronto of the fluctuation in numbers of the Ruffed Grouse (*Bonasa umbellus*) with special reference to Ontario. We have read the report through and seldom have we found a more or less technical report presented in such a clear, readable, style.

Mr. Clarke has searched the literature for data on possible fluctuations in the past and has issued a number of questionnaires through which to gather present day data. He finds that notable diminutions in the numbers of the Grouse have occurred approximately every ten years, from 1874 to 1934, and doubtless earlier; that these diminutions, preceded by comparative abundance and followed by comparative scarcity, are not simultaneous throughout the country and that they differ as much as three years at different localities; and finally that the diminution is due mainly to the failure of the young birds to reach maturity. As an example he takes ten "territories" each with its pair of birds; the normal number of young should theoretically be ten per pair but is actually less, so that the number of young and adults at hatching is 108 while in the fall it is 72 and the number of adults next spring will be 30, the decrease in the year's crop being due to shooting, and other causes. In years when the diminution takes place the number of young and adults at hatching is the same i. e. 108 but by autumn there are but 36 left and only 15 adults the next spring. These are actual counts and show clearly the nature of the decrease. As to the cause of the diminution Mr. Clarke found a number of parasites and disease germs affecting the Grouse but only one "significantly associated with the cyclic diminution and compatible with its characteristics was a blood protozoon, *Leucocytozoon bonasae*," belonging to a genus which moreover has been found to be peculiarly pathogenic to young birds. The secondary host of related species of this protozoon has been found to be a fly of the "Black Fly" group and it is possible that this is the carrier in the case of the Grouse. There is much more of interest in this carefully prepared report which is of the greatest importance in connection with investigations in North America and also in Europe with other species of Grouse. As regards the claim advanced by certain game protective publications that predators are responsible for the diminution in Grouse, Mr. Clarke finds that no such claim has any basis from a scientific standpoint for any resident or regularly migrating predators, but suggests the possibility of irregular migratory species such as the Goshawk or Snowy Owl being a factor. Investigation, however, showed that the diminution preceded the arrival of these species! It should be read by all officials of State Game Commissions where Grouse occur.—W. S.

**Are Arsenicals Dangerous to Game?**—An interesting investigation<sup>1</sup> of this subject in France should be brought to the attention of ornithologists as definite data in this vexed field are scarce. In laboratory tests, the minimum lethal dose of three arsenicals for the Common Partridge was determined: lead arsenate 60.6 mg. of arsenic per kilogram of live weight; calcium arsenate 13.8 mg.; and Paris green 10.6 mg. It was found that a smaller quantity of arsenic sufficed to kill when divided into several daily doses than was required for a single fatal dose. The Partridge is rather susceptible to arsenical poisoning compared to the Domestic Fowl which has extraordinary resistance. However, an adult Partridge can scarcely devour enough poisoned potato beetles or their larvae to obtain a lethal quantity of arsenic. The young are somewhat more in danger but it would require an improbable combination of circumstances to result in poisoning even them. The risk of Partridges being killed by the usual insecticidal treatment for potato beetles is regarded as slight. Analysis

<sup>1</sup> Chappellier, A. et M. Raucourt, Les traitements insecticides arsenicaux sont-ils dangereux pour le gibier et pour les animaux de la ferme? Ann. Ephiphytes etc., Ministry Agr. France, N. S., 2(2) 1936, pp. 191-239, 27 tables.

of carcasses of animals collected in the field showed that none had died of arsenical poisoning.—W. L. M.

**Birds against the Potato Beetle.**—Resulting from the same investigation as the previously cited paper, this account<sup>1</sup> gives some results of experimental feeding of potato beetles to the Gray Partridge. France is now experiencing the surge of a newly established pest and is interested as was the United States at a corresponding period in every agency that might reduce the invasion. The American literature on bird enemies of the potato beetle is imperfectly reviewed. Considerable attention is given to various kinds of poultry in relation to the insect, but only two wild birds of France are recorded as enemies, the "Red Partridge" and the Gray Partridge. The authors conclude: "Despite all our desire, under the circumstances, to magnify the rôle of birds, we cannot recommend that the farmer give up the sole means of safety remaining to him, namely, insecticides employed methodically and with care."—W. L. M.

**Robinson and Chasen on 'Birds of the Malay Peninsula.'**—The third volume<sup>2</sup> of this notable work has appeared and, owing to the death of the senior author, it is largely the work of Mr. Chasen, who has admirably maintained the high standard of the preceding issues. In accordance with the original plan, by which each volume is devoted to birds of a different category, the present one deals with "Sporting Birds and Birds of the Shore and Estuaries."

As the habitat or geographic arrangement of the volumes does not indicate their contents from a systematic standpoint, it may be well to state that the present volume contains accounts of fifteen Gallinaceous birds, two Bustard Quail, twelve Rails, twenty-one Pigeons, sixteen Gulls and Terns, forty-nine shore birds, twenty-six Herons, Ibises etc., five Ducks and twelve Cormorants, etc. There are twenty-five full page colored plates from paintings by Grönvold. The text, as heretofore, consists of full descriptions and measurements and a brief statement of range and habits. There are also keys for each of the groups to facilitate the identification of the species, and an introduction discussing the geography of the peninsula with a map.

We congratulate Mr. Chasen upon the way in which he has carried on this publication and are glad to know that the two remaining volumes will be prepared by him and the work completed according to the original plan.—W. S.

**Thomson's 'Birds of Cape York Peninsula.'**—This important contribution<sup>3</sup> to Australian ornithology is a report upon the results of three expeditions into this wild and extremely interesting part of the continent which covered in all about three years. The investigations were carried on under the auspices of the University of Melbourne and were primarily concerned with anthropology although much zoological work was also carried on especially with regard to geographical distribution. The author suggests, very logically, that a proper study of the Aborigines should be accompanied with a study of the general natural history so closely are the two related.

<sup>1</sup> Chappellier, A. et M. Raucourt, *Les oiseaux contre le doryphore*, op. cit., pp. 241-252, 1 table.

<sup>2</sup> *The Birds of the Malay Peninsula: A General Account of the Birds Inhabiting the Region from the Isthmus of Kra to Singapore with the Adjacent Islands.* By The Late Herbert C. Robinson and Frederick N. Chasen. Volume III: Sporting Birds; Birds of the Shore and Estuaries with Twenty-five Full-Page Plates in Colour Issued by Authority of the Federated Malay States Government. H. F. & G. Witherby, Ltd., 326 High Holborn, London, W. C. 1. 1936. Pp. i-xix + 1-264. Pls. 1-25. Price 35 shillings net.

<sup>3</sup> *Birds of Cape York Peninsula: Ecological Notes, Field Observations, and Catalogue of Specimens Collected on Three Expeditions to North Queensland.* By Donald F. Thomson, D.Sc., Research Fellow, University of Melbourne. Pp. 1-82. Pls. I-XV. Price one shilling six pence. Angus and Robertson, Sydney, Australia.



The report begins with a narrative and a discussion of the "flora-fauna association areas." The zones that Dr. Thomson recognizes are the Mangrove, Salt Pans, Scrubby Ridges, Savannah Woodland and Forest, and Tropical Jungle and Rain Forest. The affinity of Cape York with New Guinea, which has long been recognized, is apparently stronger than had been supposed and our author states that "a man might stand in the jungle on the Rocky River, a full 240 miles from Cape York, and 320 from the nearest point of the New Guinea coast, and although he were observant and familiar with many groups of animals, he might be unable to state whether he stood in Australia or in Papua," so closely do plant and animal life agree. The Papuan element is evident throughout the peninsula and of the 183 species of birds listed only 79 are endemic Australian forms while 104 have a range extending to New Guinea or beyond and 19 of the latter may be regarded as Papuan forms that have entered the peninsula in comparatively recent times and have become isolated in the jungle area of the east coast, the coastal range acting as a barrier to migration. The list of species is well annotated and includes data on all specimens and eggs collected. We note that a purely binomial nomenclature is adopted. There are fifteen halftone plates illustrating mainly nests and eggs and a faunal sketch map.—W. S.

**Heim de Balsac on the Mammals and Birds of North Africa.**—This notable work<sup>1</sup> is an ecological-geographical discussion of the fauna of the Sahara and the Barbary States based on the birds and mammals. It is divided into two parts the first dealing with the characteristics of the fauna of North Africa and the second with the relations of the birds and mammals to the desert environment. Eight chapters of the first part discuss the line of separation between the faunas of Barbary and the Sahara; the origin of the several elements of their faunas; the palaeogeographic relations of the faunas; a comparison of the fauna of Barbary with that of the Atlantic Islands (Canaries etc.) and of Lybia. Part two, with twelve chapters, discusses the physical features of the desert and its biological areas; the water problem of desert birds and mammals; the effect of solar radiation, temperature and wind on animal life; hibernation and aestivation; coloration and its protection; the adaptation of animals to the desert; the development of external ears and audital bullae in desert mammals. Lack of space prevents a more detailed review of this work but it should be consulted by all interested in desert life and its peculiarities. There is a bibliography of 671 titles, sixteen maps illustrating faunal or climatic areas and seventeen plates presenting characteristic mammals or scenery.—W. S.

**Errington and Hamerstrom on the Northern Bob-white's Winter Territory.**—Ornithologists, especially the younger members of the fraternity, who have felt that their field is overcrowded and that the opportunities for making important contributions to science are rapidly passing with the generation that has described everything in sight, should take heart from a new work<sup>2</sup> on the Bob-white that has just come out of the Midwest. For notwithstanding the facts that the Bob-white is probably the most written-about of American birds and that Stoddard's monumental volume (Stoddard, Herbert L. "The Bob-white Quail: Its Habits, Preservation, and Increase," 1931) is generally considered to represent the most complete study ever

<sup>1</sup> *Biogéographie des Mammifères et des Oiseaux de l'Afrique du Nord* par Henri Heim de Balsac Docteur ès Sciences. Paris, Les Presses Universitaires de France 49, Boulevard Saint-Michel. 1936. Pp. 1-446, maps 1-xvi, pll. I-XVII. Price 125 francs.

(Supplément XXI Bull. Biologique de France et de Belgique.)

<sup>2</sup> Errington, Paul L., and Hamerstrom, F. N., Jr., *The Northern Bob-White's Winter Territory*. Research Bull. 201, Agricultural Experiment Station, Iowa State College of Agriculture and Mechanic Arts, Ames, June, 1936, pp. 301-443, 26 text figures, 75 tables, 3 pp. of bibliography.

made of any species of upland game bird, we have here a bulletin of nearly 150 pages devoted largely to a discussion of a phase of Bob-white's life history that other writers have hardly considered although it is fundamental to intelligent management of this splendid game bird. Even more significant is the present authors' frank admission that after six years of research they are still unable to explain what actually determines the carrying capacities of Quail territories.

It is patent then that despite the vaunted richness of our ornithological lore, the new movement to make wildlife conservation dynamic through the application of sound ecologic principles has found our information sadly deficient. The wildlife managers are asking questions a plenty, but we ornithologists do not have the answers. Errington and Hamerstrom are trying to find some of them, but there are enough others to be sought to give ample scope to the most ambitious researchers, sighing for new worlds to conquer.

To those concerned with the management or administration of upland wildlife, Errington's name has been for several years a household word. Work under Aldo Leopold at the University of Wisconsin supplied the stimulus that has kept him literally on the trail of Bob-white year in and year out, and has kept his pen turning out the results of his studies in a steady stream. Hamerstrom's connection with these studies is not made plain in the publication here reviewed, but it is known to the reviewer that he became associated with Errington about two years ago and that he and Mrs. Hamerstrom carried on a considerable part of the later field work here reported.

As the bulletin expressly attempts to bring up to date the knowledge of individual covey ranges or wintering territories of the Bob-white, it is to be regretted that the authors did not present more of the history of their studies, for the benefit of the growing army of young wildlife managers who do not have access to Errington's earlier papers.

Seemingly too, in a work of this magnitude a few paragraphs might have been devoted to acknowledgements, for numerous quotations from letters indicate that the authors enjoyed a considerable correspondence with their co-workers and otherwise had access to information beyond that contained in the seventy-seven works listed in the bibliography. However, these are minor criticisms of a very important document that strives to throw all possible light on the fundamental questions of territorial carrying capacity and its determinants.

The work is divided into four parts, the first of which, under the caption "Introductory Remarks and Technique," among other things, defines and discusses carrying capacity and its measurement, behavior of wintering Bob-whites and covey composition, census methods and interpretation of data, and the technique of tracing mortality. In their treatment of the last item the authors give evidence of a commendable conservatism in designating causes of mortality, that all workers in the wildlife field would do well to emulate.

In Part II is detailed the survival data obtained during six winters from seventy specific Bob-white territories, or groups of territories, in Iowa and Wisconsin agricultural communities; and in Part III, carrying capacity, as suggested by these data, is analyzed. This is by far the most significant part of the work. Very good arguments are presented to prove that the capacity of a given covey territory to winter Bob-white is definitely limited to a rather constant maximum number of birds irrespective of favorable weather conditions or lack of predation. In fact the authors hold that predation is an expression of habitat deficiency—not a measure of numbers, skill, or ferocity of predators; that Bob-white in excess of carrying capacity of their

particular territory will disappear even though there may be a complete absence of predators.

This of course knocks into a cocked hat the old arguments for predator control that have been advanced by the sportsmen *ad nauseum*, and places in the hands of the zoophile a powerful scientific weapon with which to combat the intolerant persecution of some of our finest birds and most interesting mammals.

But the authors play no favorites, and go on to show that by reasonable shooting, the fall surplus of Bob-whites above winter carrying capacity of their range may be utilized instead of being annually lost. In their own words: "Shooting is not a biological necessity [as has been asserted so often by sportsmen]; neither is it a practice necessarily detrimental to the species, if wisely regulated." However, they point out that "whether it endures may be contingent upon the progress which its followers are able to make in the elimination of the social and biological abuses which have hitherto attended it."

Another generally accepted idea that now seems in need of revision concerns the role of "buffer" species, for on page 377 it is stated, "We have no evidence which would lead us to suspect that fluctuations in buffer populations have played any part in either mitigating or increasing predator pressure on the particular bob-white populations with which we have been working."

The fourth and last part of the bulletin is devoted to management of the Bob-white's winter territory, and includes discussions of food, cover, predator control, management of shooting, and so on. The novice may find these discussions somewhat disappointing, for the authors do not lay down detailed directions for the execution of specific operations. His disappointment will turn to dismay when he reads that Quail "with or without evident cause may not use territories provided for them." But the trained wildlife manager will find here much thought-provoking material; for example, evidence that the nearer the peak a population is maintained, the higher must be the ratio of brood stock to winter population, just as progressively increased horsepower per knot is required to drive a liner at higher speeds.

The authors get right down to fundamentals when they write: "The bob-white thrives best in agricultural communities, and its fortunes in the long run are essentially the fortunes of the soil. Bob-white management may be to a large degree correlated with erosion control. Management of this, as well as other wild species of similar requirements, may reasonably be dove-tailed into sound agricultural practice over wide areas of land.

"Finally, effective bob-white management is not necessarily a matter of what is done; more often it seems to be a matter of what is *not* done. The truth and significance of this thought may possibly be more readily appreciated when one considers that, of the usual practices which evict Quail populations from many farms, not a few are practices which work to evict human populations, ultimately and permanently, from the same land."

Could there be a more impressive argument for the preservation of Bob-white?—  
E. G. H.

**Parker's Ethics of Egg Collecting.**—During the years 1934 and 1935, a lively controversy was carried on in the columns of 'The Field' (London) on the subject of egg collecting, in the course of which hundreds of letters were received. The editor, Eric Parker, has digested these and has presented a summary in most interesting book form<sup>1</sup> All of the arguments for and against the practice with which

<sup>1</sup> Ethics of | Egg-Collecting | By Eric Parker, M. B. O. U. | with a foreword by | The Right Hon. Lord Desbrough, K. G. | Published by | The Field | The Field House, Bream's Buildings | London, E. C. 4. | Pp. 1-120 + i-iv. Price 5 shillings net.

we have become familiar in America, and some additional ones, are presented. Practically every statement is denied by some other contributor and, while it is evident that many claims are quite unsubstantiated, the whole thing would be very amusing were it not for the seriousness of the problem involved.

The destruction and possible extermination of birds in England by oologists or "egg clutchers," as they seem to be frequently termed there, seems to be much more serious than in America owing to the wealthy collectors who employ professional egg hunters to secure material for them. Neither of the two have any regard for the law or for the rights of private individuals upon whose grounds trespass is made. While fines are no deterrent to the wealthy collector, just what to do with these offenders is the problem. In one instance the entire layings of forty pairs of Red-backed Shrikes for an entire season were secured by one collector. Another collector, seeking erythrystic eggs of the Guillemots, kicked all the eggs on the cliffs, which he was exploring, into the sea in the hope that some of the second sets would contain erythrystic eggs!

The old argument that the birds will all lay again is brought up and promptly denied for a number of species and the reply so often made here that, if one collector takes only the first laying, another will take the second! Other correspondents claim that egg collecting is the inherent right of every Englishman and, while they do not see any need for more than one set of each kind, egg collecting is one of the finest "sports" that there is and should not be interfered with. Then the egg collectors bring in the old, old discussion as to whether the bird or the egg comes first and claim that the collecting of specimens of the birds is far more potent in decreasing the numbers of a species than the collecting of its eggs.

Raptorial birds come in for especial consideration because many of them have been ruthlessly persecuted. The claim is made that the game keepers kill every Hawk that comes upon their territory and that they are responsible for the decrease in the birds and that furthermore they do not hesitate to sell eggs to collectors. The protectors proceed to mark the Hawk eggs with indelible pencil to make them useless for specimens and the oologists promptly smash them so that the birds will lay again. Then appears the "falconer" in the discussion; he marks the eggs just as does the bird protector but with the object of ensuring their hatching so that he may procure the young birds for training!

As a preventative it is suggested that a list of all collectors be printed, including the actual egg gatherers, with addresses and portraits if possible—a "black list" as it were, so that owners of property may be able to recognize them. Another suggestion is to have employees of an estate soak the collectors in the Duck pond. Members of conservation societies have organized to trail every known collector on his jaunts and suggest the formation of a "society for the extermination of the egg collector." Another suggestion is that egg collectors are really kleptomaniacs and cannot be reached by law as they are unable to restrain their desire for eggs and they should therefore be gathered together in some suitable institution and kept there for the duration of the egg-laying period!

The main result of the discussion seems to have been to raise a very widespread interest which, it is to be hoped, will make egg collecting so unpopular with the public at large that collectors will be forced to abandon their hobby.

In America it would seem to be high time to give this matter very careful attention. We all know that a large number of those who make collections and secure permits under the plea of scientific research never contribute anything to science. Our data on distribution, dates of laying, and location of nests have been derived as



much from those who never collect eggs than from those who do and does not require the collecting of the eggs. Moreover many present day investigations on behavior of nesting birds, care of young, length of incubation, etc., etc., are curtailed or prevented by the collecting of the eggs.

We are not arguing for the abolishment of collecting but we think that in securing permits, either state or federal, the recipient should be required to state explicitly, before a new permit is granted, just what scientific results were furthered by his collecting of the year before. The mere listing of the specimens does not tell the story and cannot easily be checked up.

Moreover, since in recent years collecting of skins except for scientific institutions or definite problems have very largely been abandoned, why cannot the oölogists also "play the game" and refrain from the collecting of eggs in the case of Eagles, and other birds that are rare or threatened with extinction?

If something is not done we shall soon see various states following the recent action of Georgia (since, we believe, modified) banning all collecting. The ranks of bird lovers and students of the living bird far outnumber the collectors, and with proper organization they may control legislation, abolish all collecting and render science a severe blow.—W. S.

#### Other Ornithological Publications.

**Baxter, Evelyn V. and Rintoul, Leonora J.**—Notes on the Status of Birds in Scotland in 1935. (Scottish Naturalist, July–August, 1936.)

**Bond, James.**—Resident Birds of the Bay Islands of Spanish Honduras. (Proc. Acad. Nat. Sciences Philadelphia, LXXXVIII, pp. 353–364, August 14, 1936.)—This is a report on a visit made in late February and March, 1936 (the inclusive dates have been inadvertently omitted) with a list of forty-three forms recorded from the islands and annotations on those observed by the author. The following are described as new: *Buteo magnirostris sinus-honduri* (p. 355); *Ortalis vetula deschauenseei* (p. 356); *Anthracothonax prevosti nigrilineatus* (p. 359); *Centurus santa-cruzi insulanus* (p. 360); *Centurus rubriventris tysoni* (p. 361); *Myiarchus tyrannulus insularum* (p. 361).

**Brodkorb, Pierce.**—Geographical Variation in the Piñon Jay. (Occas. Papers Mus. Zool., Univ. of Michigan, No. 332, May 26, 1936.)—*Gymnorhinus cyanocephalus rostratus* (p. 2) from California is described as new; *G. c. cyanocephalus* is restricted to the northern Rocky Mountains and *G. c. cassini* (McCall) is used for the bird of Utah to Arizona.

**Brodkorb, Pierce.**—A New Subspecies of Bittern from Western North America. (Occas. Papers Mus. Zool., Univ. of Michigan, No. 333, May 26, 1936.)—*Botaurus lentiginosus peeti* (p. 2)—Sonoma County, Calif.

**Brodkorb, Pierce.**—A New Genus for *Empidonax atriceps* Salvin. (Occas. Papers Mus. Zool., Univ. of Michigan, No. 331, May 26, 1936.)—*Cnemonax* (p. 1).

**Butler, Amos W.**—Vultures in Indiana. (Proc. Indiana Acad. Sci., Vol. 45, 1936.)

**Manuel, Canuto G.**—Review of Philippine Pigeons I: The Genus *Phapitreron* (Philippine Jour. of Science, February, 1936.)—Two forms described by Hachisuka and one by Mearns are reduced to synonymy while *P. amethystina celestinoi* (p. 300) from Bohol, and *P. a. mindanaoensis* (p. 301) from Mindanao, are described as new.

**Manuel, Canuto G.**—New Philippine Fruit Pigeons. (Philippine Jour. of Science, February, 1936.)—*Leucotreron leclancheri longialis* (p. 307) Batan, and *Neoleucotreron merrilli faustinoi* (p. 307) Mt. Tabuan, Luzon, are described as new.

**Crandall, Lee S.**—Birds of Paradise in Display. (Bulletin N. Y. Zool. Soc., May–June, 1936.)—With a short preliminary discussion of the nature of display, whether

as a lure to the female or a warning to other males, the author presents fourteen wonderful photographs of male birds of six species in the act of display in the New York Zoo and a color plate of the Blue Bird of Paradise from a painting by Paul Bransom.

**Davis, Malcolm and Friedmann, Herbert.**—The Courtship Display of the Flightless Cormorant. (Scientific Monthly, June, 1936.)—As observed in the National Zoological Park, Washington, D. C.

**Friedmann, Herbert.**—A New Race of the Crested Eagle-Hawk. (Jour. Washington Acad. Sci., Vol. 25, No. 10, October 15, 1935.)—*Spizaetus ornatus vicarius* (p. 451) British Honduras.

**Griswold, John A., Jr.**—A New Subspecies of *Lurocalis* from Panama. (Proc. New England Zool. Club, Vol. XV, July 13, 1936, pp. 101-103.)—*Lurocalis semitorquatus noctivagus*, Panama.

**Howell, Arthur H.**—Recent Additions to the List of Florida Birds. (Florida Naturalist, July, 1936.)

**Junge, G. C. A.**—The Mysterious *Carpophaga vandepolli*. (Zool. Mededeelingen, XVIII, 1935.)—*Ducula aenea consobrina* Salvadori.

**Junge, G. C. A.**—Fauna Simalurensis—Aves. (Temminckia, I, 1936.)—Report on a collection made by E. Jacobson and W. C. van Heurn from Simalur, Pulu Si Laut and Pulu Babi. The following are described as new: *Spizaetus cirrhatus vanheurni* (p. 24) *Eurystomus orientalis oberholseri* (p. 30); *Lyncornis macrotis jacobsoni* (p. 39); *Eudynamis scolopacea simalurensis* (p. 43).

**Kies, C. H. M. H.**—Nature Protection in the Netherlands Indies. (Publication No. 8 of the American Committee on International Wild Life Protection.

**Kuroda, Nagamichi.**—A Glimpse of the Animal and Plant Life at Shiobara, Japan. (Botany and Zoology, IV, Nos. 1-3, 1935-1936.) [In Japanese.]

**Longstreet, R. J.**—Movements of the Eastern Brown Pelican. (Florida Naturalist, July, 1936.)—An interesting summary of the movements of banded birds.

**Mason, C. R.**—Counting Ducks from an Airplane. (Florida Naturalist, July, 1936.)

**Mayr, Ernst.**—Birds Collected during the Whitney South Sea Expedition XXXI. Descriptions of twenty-five species and subspecies. (Amer. Mus. Novitates, No. 828. March 16, 1936.)

**Mayr, Ernst.**—New Subspecies of Birds from the New Guinea Region. (Amer. Mus. Novitates, No. 869, July 2, 1936.)—Ten new forms described.

**Mayr, Ernst, and Rand, A. L.**—Results of the Archbold Expeditions. No. 10. Two New Subspecies of Birds from New Guinea. (Amer. Mus. Novitates, No. 868, July 2, 1936.)

**Maloney, John W.**—Birds of Chinese Tradition. (Nature Magazine, July, 1936.)

**Mendall, Howard L.**—Conviction Without Trial. (Nature Magazine, September, 1936.)—Although proven to be of no damage to fishing or other of man's activities the bird is still ruthlessly slaughtered in Minnesota, the Dakotas and many of the Southern States.

**Palmgren, Pontus.**—Ueber die Vogelfauna der Binnengewässer Alands.—A detailed account of the birds of the several islands, with illustrations. [In German.]

**Perkins, Anne E.**—The Puffins of Machias Seal Rock. (Nature Magazine, August, 1936.)

**Sheppard, R. W., Hurlburt W. E., and Dickson, G. H.**—A Preliminary List of the Birds of Lincoln and Welland Counties, Ontario. (Canadian Field Naturalist, September, 1936.)

**Snyder, L. L. and Shortt, T. M.**—A Summary of Data Relative to a Recent Invasion of Willow Ptarmigan. (Occas. Papers of the Royal Ontario Museum of Zool., No. 3, July 20, 1936.)—An invasion extending from Alberta to Quebec is discussed with reference to periodic increases in the species.

**Stresemann, E. and deSchauensee, R. M.**—Notes on Some South Asiatic Species of the Genus *Cyornis*. (Proc. Acad. Nat. Sci., LXXXVIII, pp. 337-351, July 23, 1936.)—A welcome review of this very difficult group based on a large amount of additional material to that used in Dr. Stresemann's previous review. This previous arrangement was upheld except that the *tickelliae* group is found to be distinct from *rufigaster*. New keys and distributional maps add to the value of the paper.

**Sutton, George M.**—The Postjuvenile Molt of the Grasshopper Sparrow. (Occas. Papers of the Museum of Zool., Univ. of Michigan, No. 336, July 7, 1936.)

**Toner, G. C.**—Birds of Leeds County [Ontario]. (Bull. Eastern Ontario Fish and Game Protective Asso., July, 1936.)

**van Rossem, A. J.**—Notes on Birds in Relation to the Faunal Areas of South-Central Arizona. (Trans. San Diego Soc. Nat. Hist., VIII, No. 18, May 29, 1936.)—An investigation intended to attempt to reconcile the opinions of Mearns and Swarth on the faunal areas west of the Santa Rita Mountains and to obtain a better understanding of the areas of northern Sonora. Interesting results were obtained and are presented in a fully annotated list. The apparent differences of opinion in the case of the authors mentioned is largely due to the fact that each was unfamiliar with the areas covered by the other!

**Van Tyne, Josselyn and Koelz, Walter.**—Seven New Birds from the Punjab. (Occas. Papers of the Mus. of Zool., Univ. of Michigan, No. 334, May 27, 1936.)

**Van Tyne, Josselyn.**—The Discovery of the Nest of the Colima Warbler (*Vermivora crissalis*). (Misc. Publ. No. 33, Univ. Michigan, Mus. of Zool., August 7, 1936.)—A detailed account of the discovery made known in 1933, with a colored plate from a painting by Sutton.

**Zimmer, John T.**—Studies of Peruvian Birds. XIX, XX, XXI, June 19, 22 and 23, 1936. (Amer. Mus. Novitates, Nos. 860, 861, 862.)—These papers deal with the Dendrocolaptidae and Furnariidae and like their predecessors consist of very full and careful comments on the relations of various forms and descriptions of many that are new.

#### The Ornithological Journals.

**Bird-Lore.** XXXVIII, No. 4. July-August, 1936.

The Way of a Song Sparrow. By Margaret M. Nice.—A study in behavior and territory.

Feeding California Hummingbirds. By B. F. Tucker.—Sugar water supplied in glass containers which were bee proof.

The Composer. By Frank M. Chapman.—A study of the singing of the Black-billed Wren (*Pheugopedius fasciato-ventris albigularis*) at Barro Colorado.

Save the Bald Eagle. By Francis H. Herrick.

Water-Fowl Restoration Program of the Biological Survey. By Raymond Soderberg.—An excellent summary of the work of the Survey yet the widely sought closed season on Ducks was not granted. The attitude of the Survey seems to be that without license fees no protection can be provided, but is this proven?

There is an excellent editorial on the evils of present day "utilitarian conservation" whereby all forests are destined to be converted into picnic grounds and wild life areas devastated in the interests of alleged "mosquito control" and activities fostered by business and hotel interests!

**The Condor.** XXXVIII, No. 4. July-August, 1936.

Continuity of Behavior in the Nuttall White-crowned Sparrow. By Barbara D. Blanchard.

Steps in the Development of the Bird-Flower. By A. L. Pickens.—Further investigations on attractiveness of different colors to birds.

Harry Schelwald Swarth. By Jean M. Linsdale.—An appreciative biography with a bibliography.

**The Wilson Bulletin.** XLVIII, No. 2. June, 1936.

Trends in Modern Ornithology. By Joseph Grinnell.

Notes on the Winter Food of the Short-eared Owl. By Ivan R. Tomkins.

Notes on Nesting Ruby-throated Hummingbirds. By A. L. Pickens.—With numerous interesting sketches of the birds' activities.

Thure Ludwig Theodor Kumlien. By Mrs. H. J. Taylor.—A biography of this pioneer Wisconsin ornithologist.

Notes on the Field Sparrow in Michigan. By Lawrence H. Walkinshaw.—With data on seventy nests, weights of many young, etc.

Restoration of Roadside Cover by the C. C. C. By William J. Howard.—Illinois is to be congratulated upon this C. C. C. activity. In New Jersey the same organization seems bent only on the destruction of as much bird cover as possible, clearing away all shrubbery along woodland streams to make them more accessible for ditching and oiling of the water in the far-fetched "mosquito control."

Some Observations on the Ruffed Grouse in Wisconsin. By Wallace Grange.

Impressions of Grand Manan Bird Life. By Olin Sewall Pettingill, Jr.—With excellent photographs.

Notes on the Summer and Fall Birds of the White Mountains, Arizona. By Lawrence M. Huey.

**Bird-Banding.** VII, No. 3. July, 1936.

The White Stork as a Subject of Research. By Ernst Schuz.—A study of the bird in Germany.

Fertile Eggs from Pheasants in January by "Night-Lighting." By Thomas Hume Bissonnette and Albert G. Csech.

Parasitism of Birds' Nests by *Protocalliphora* at Groton, Mass. By Edwin A. Mason.

Returns of Banded Birds: Second Paper. By F. C. Lincoln.—A long list.

An excellent index to the six published volumes of 'Bird-Banding,' 1930-1935, has been issued, prepared by Maurice Broun.

**The Oölogist.** LIII. Nos. 4 to 8. April to August, 1936.

Birds Visiting a Florida Lawn. By Charles L. Phillips. [May.]

Nests Found on a Portion of the Nueces River Flats, Texas. By W. B. Savery. [June.]

**The Cardinal.** IV, No. 4. July, 1936.

Kirtland Marginalia. By Bayard H. Christy.—An interesting of J. P. Kirtland with extracts from letters and notes and a portrait.

Chickadees of Western Pennsylvania. By W. E. C. Todd.—While the Black-cap is the more northern species and the Carolina is restricted to the southwestern counties both occur as breeders along in Beaver County.

**The Nebraska Bird Review.** IV, No. 3. July, 1936.

The Bird Life of Lincoln County. By Wilson Tout.

Local Notes and Migration schedules.

**Iowa Bird Life.** VI, No. 2. June, 1936.



The Passenger Pigeon in Northwestern Iowa. By Ellison Orr.

Accounts of Club activities, etc.

**The Migrant.** VII, No. 2. June, 1936.

Nesting of the Cliff Swallow in Tennessee. By A. F. Ganier and S. A. Weakley.

Many notes on the birds of Tennessee.

**The Oriole.** I, No. 2. April, 1936.

A Natural Wild Life Refuge. The Okefenokee Swamp. By Earle R. Greene.

Many notes on the birds of Georgia.

**The Oriole.** I, No. 3. July, 1936.

The Distribution of the Limpkin and its Staple Food. By Francis Harper.

**Bird Club Notes of Long Island.** I, No. 1, August, 1936.

Under this title a new local journal has been started dealing with Long Island birds and published by the Bird Club of Long Island. The present issue is largely in the nature of an announcement and we infer that 'Long Island Bird Notes' conducted by the Woodmere Academy will be combined with the present publication. Dr. David Harrower of Woodmere is a member of the Board of Directors and we notice the names of many prominent Long Island ornithologists on the Advisory Board.

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The following mimeographed journals deal with the ornithology of their respective areas.

**The Raven.** VII, Nos. 5-6 and 7-8. May to August, 1936.

Notes on Virginia birds. The editor, Dr. J. J. Murray contributes sketches of two Virginia ornithologists, Percy E. Freke and H. B. Bailey.

**The Prothonotary.** II, Nos. 6, 7 and 8. June, July and August, 1936.

Birds of Buffalo, New York and vicinity.

**The Redstart.** III, No. 9. June, 1936.

Some Birds of a West Virginia Mountain. By Charles Conrad.

Other notes on birds of the state.

**The Flicker.** VIII, No. 2. May, 1936.

Notes on Minnesota birds.

**The Jack-Pine Warbler.** XIV, No. 3. July, 1936.

Kirtlandiana. By Geneva Smithe.—Many letters, etc., of J. P. Kirtland with a sketch of his life.

Notes on Michigan birds.

**Bird Calender of the Cleveland Bird Club.** 32d Year, Bulletin I. July, 1936.

Migration records for Cleveland, Ohio.

**Inland Bird Banding News.** VIII, No. 2. June, 1936.

Bird Banding notes for the Mississippi Valley.

**Long Island Bird Notes.** III, Nos. 22-36. May 27-September 2, 1936.

**Audubon Society of Missouri, News Letter.** III, Nos. 6, 7 and 8. June to August, 1936.

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**The Ibis.** (13th series). VI, No. 3. July, 1936.

On the Birds of East Finmark. Part II. By H. M. S. Blair.

Bird-Insect Nesting Associations. By R. E. Moreau.—The most interesting case is of birds that build close to nests of stinging hymenoptera and presumably derive protective benefit from the proximity. The possible benefit to the insects is discussed. In the case of birds nesting within the nests of insects the author might have quoted an instance of an American House Wren building in the paper nest of a

hornet (Auk, 1889, p. 339), but as he says of similar instances of use of "old" nests it is of little interest. The cases he discusses are nestings in "active" nests of termites.

**Recent Progress in the Study of Bird Migration.** By A. Landsborough Thomson.—This is a review of the literature of the subject for the years 1926–1935. The point of beginning was determined by the fact that the author's volume on the subject as well as those of Wetmore and Wachs appeared in 1926. He follows the order of his own work and comments on the papers dealing with each phase of the subject. As he says "The output is so great that even those who give special attention to this field can scarcely keep pace with it." Dr. Thomson's carefully prepared review is therefore all the more timely and important to anyone interested in migration. While he does not advance any original theories his comments and criticisms of the work of others is often enlightening, and his remarks on the work of Rowan and Bissanette are well worthy of careful consideration.

**Birds of Jidda and Central Arabia.** By George Latimer Bates.

**Notes on the Birds of Lakes Ochrid, Malik, and Prespa and Adjacent Parts of Yugoslavia, Albania and Greece.** By W. H. Thorpe, P. T. Cotton and P. F. Holmes.

**Notes on Birds Observed in Greenland and Baffin Land.** By C. T. Dalgety.

**Further Notes on the Birds of the Balearic Isles.** By P. W. Munn.

**Bulletin of the British Ornithologists' Club.** CCCXCVI. June 3, 1936.

J. Delacour discusses the size of the webs on the feet of Redshanks. C. H. B. Grant and C. W. Mackworth-Praed consider African species of *Cuculus*.

**Bulletin of the British Ornithologists' Club.** CCCXCVII. July 29, 1936.

G. L. Bates describes *Calandrella blanfordi philbyi* (p. 130), from Arabia.

Grant and Mackworth-Praed discuss migrations of the Lesser Cuckoo and type localities of some African birds.

**British Birds.** XXX, No. 1. June, 1936.

**Roosting Habits of the Tree Creeper.** By P. G. Kennedy.—Make small holes in *Sequoia* tree trunks in English parks. From four to fifteen roosting birds were found each night.

**Behaviour of Starlings at Nesting Site.** By George Marples.

**Further Notes on the Sparrow Hawk.** By J. H. Owen.

**British Birds.** XXX, No. 2. July, 1936.

**On the Fighting of the Blackcock.** By George K. Yeates.—With interesting photographs.

**The Spring Habits of the Red-legged Partridge.** By William E. Glegg.

**British Birds.** XXX, No. 3. August, 1936.

**Further Notes on Territory in the Great Crested Grebe.** By L. S. V. Venables and David Lack.

**The Colouring of the Soft Parts of the Buff-backed Heron.** By B. W. Tucker.

**Recoveries of Banded birds.**

**British Birds.** XXX, No. 4. September, 1936.

**Report on the Swallow Enquiry.** By A. W. Boyd.

**Proportion of Sexes in Roosting Chaffinches.** By Guy Charteris.—At four localities the males ranged from 58 to 63 percent in a total of some 1800 trapped birds but in another only 46 percent in 1000 birds

**Winter Behaviour of Moor-Hens.** By Averil Morley.

**The Oologists' Record.** XVI, No. 2, June, 1936.

**The So-called "Injury-Feigning" in Birds.** By F. C. R. Jourdain.—The discussion which has threatened to swamp the correspondence section of 'The Auk' has broken out in the British Journals and a number of cases are reported in 'British Birds'

while the above extended compilation and discussion adds much to the interest in the matter.

While Mr. Jourdain admits that the theory that the bird is the victim of contrary emotions explains most cases, he thinks that it does not account for all; yet he states that the action "is not the result of a thought out plan to make the looker-on believe that the bird has been injured."

Notes on the Egyptian Hoopoes and their Nests. By R. H. Greaves.

**The Avicultural Magazine.** (5th series) I, Nos. 6, 7 and 8. June-August, 1936.

Notes and papers on aviculture. There are colored plates respectively of the Glittering Copper Pheasant and Chestnut-breasted Finch.

**Bird Notes and News.** Summer number, 1936.

The National Park of Patagonia. By F. M. Viscount Allenby.

Notes on the Birds of Lord Howe Island. By W. H. Hamer.

Many notes and letters on bird conservation.

**The Emu.** XXXVI, Part 1. July, 1936.

Albatrosses and Petrels in the Southwest. By F. L. Whitlock.

The Food of Australian Birds with Reference to Protective Adaptations in Insects. By Keith C. McKeown.—This paper is a criticism of certain views brought forward by W. L. McAtee in his "Effectiveness in Nature of the So-called Protective Adaptations in the Animal Kingdom" and a presentation of lists of the Australian birds which feed on "protected insects." Some species, as the Robins, seem to have a marked preference for such insects.

Birds of the Pilliga Scrub. By E. C. Chisholm.

A Key to the Procelariiformes. By G. M. Mathews.

**The South Australian Ornithologist.** XIII, Part 7. July, 1936.

The Breeding of the Sooty Shearwater (*Puffinus griseus*) on Tasman Island. By F. W. Jones.

Several local lists.

**L'Oiseau.** VI, No. 3. 1936. [In French.]

The Flying of the Eagle in Turkestan. By G. Dementiev.—Interesting account of the use of the Golden Eagle in falconry, illustrated.

A Note on the Classification of the Anatidae. By J. Delacour.—Two new generic (or subgeneric) names are proposed; *Callonetta* (p. 369) for *Anas leucophrys* Vieillot and *Phaeonetta* (p. 377) for *Anas erythrophthama* Wied.

Ornithological Notes on a Second Expedition to Malaysia. By J. Berlioz—Lombok, Bali and Celebes.

A Contribution to the Anatomy and Biology of the Hummingbirds. By G. Steinbacher.—Based on observations on captive birds in the Berlin Zoological Garden. Food and tongue structure are considered.

Rare and Remarkable Birds from the Philippines. By Marquis Hachisuka.

The Rollers and Eurystomes. By H. von Boetticher.—Distribution and relationship of the forms with maps.

Revision of the Genus *Alcippe* Blyth. By K. Y. Yen.—*Alcippe Delacouri* (449) a new name for *Mitla cierea* Blyth.

A Contribution to the Food of Some Birds of Vendee. By G. Guerin.

Ornithological Report for Tunis for 1935. By G. deGuirchitch.

**Le Gerfaut.** XXV, No. 4 and XXVI, No. 1. 1935 and 1936. [In French.]

Birds of the Basin of the Tas and Elogoui (Western Siberia). By W. N. Seanon and A. A. Sludsky.

Various articles and notes on Belgian birds.

- Journal für Ornithologie.** 84 Jahrgang, Heft 3. July, 1936. [In German.]  
 Stork Migration and the Mediterranean. By H. Geyr von Schweppenburg.  
 Anatomical Researches on *Phytoloma rara*. By Werner Küchler.  
 On the Migration and Ecology of *Calidris temminckii* in Saxony. By Heinrich Dathe.  
 Observations on the Life History of *Phylloscopus collybita*. By Fritz Prenn.  
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Geographic Distribution of the Pycnonotidae of the Indian Archipelago IV. By Baron Snouckaert van Schauburg.

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**Ceskoslovensky Ornitholog.** 1936, No. 3. [In Hungarian.]

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**Burt's 'The Resident Birds of Southern Michigan.'**—The Cranbrook Institute of Science has published a beautifully gotten up brochure<sup>1</sup> on the resident birds of southern Michigan, presenting brief and well conceived accounts by William Henry Burt and reproductions of line drawings and pencil sketches by George Miksch Sutton, the latter representing the Owls and Quail and forming full page pictures are remarkable bird portraits. The publication will prove of great interest to all who concern themselves with wild life study, not only in Michigan but in other northern states, as well, and is a credit to author, artist and publisher.—W. S.

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<sup>1</sup> The Resident Birds of Southern Michigan. By William Henry Burt, University of Michigan. Illustrations by George Miksch Sutton, Cornell University. Bulletin No. 7, June, 1936. Cranbrook Institute of Science, Bloomfield Hills, Michigan. Pp. 1-43, price 50 cents.

## CORRESPONDENCE.

## "Injury Feigning" by Birds.

Editor of 'The Auk':

The recent comment in the correspondence department of 'The Auk' on injury-feigning in nesting birds has interested me considerably. H. S. Swarth's statement in the July, 1935, number that he had never known a passerine species to practice this trickery has brought forth a much smaller volume of contradictory evidence than I expected to see. The behavior of passerine birds in western North America would seem to be somewhat different in this respect from that of similar species in this southeastern corner of the continent, if Swarth's observations represent the true situation in the West.

Pretending injury is a common habit of a good many small passerine birds here in Florida. The Warblers are a notable group. I have found nests of all the species known to breed in the eastern part of the state with the exception of the Yellow-breasted Chat, which is very rare and local in distribution. Of the other eight Warblers that nest here I have seen some individuals of each species feign helplessness. A Pine Warbler here will quite frequently flutter the thirty-five or forty feet from its nest down to the ground after the climber has reached the nest level. The bird will then usually hobble about with wings drooped and tail spread, returning to the tree shortly to make a vocal protest at the intrusion. Even after returning to the nest tree the bird will sometimes flutter along the branches in the same way it did on the ground. I have examined a great many Pine Warbler nests and have known but few birds that did not make such a demonstration.

The Yellow-throated Warbler behaves much the same as the Pine, but I have never known it to continue the injury-feigning after returning to the nest tree. A nest of this species found in April this year was twenty-five feet up and about the same distance out from the trunk of the tree. I climbed a pine that stood ten feet from the nest and with a bamboo pole hooked the festoon of Spanish moss that held the object of my interest, in an attempt to maneuver it into position to determine its contents. When the pole touched the moss, the sitting bird slipped from the nest and dropped to the ground almost as if shot and fluttered off ten yards or more before regaining her composure. Such an observation might easily lead one to believe that the injury-feigning bird "is deliriously excited and has a fit," as A. H. Chisholm says was claimed by an English writer.

The behavior of Swainson's Warbler, on the other hand, gives an entirely different impression. This species is rare here, inhabits only the densest swamps, and probably sees little of man. They are of an unusually confiding nature, or perhaps this lack of fear is evidence of their ignorance of man's ways, in turn due to lack of contact with our species. I have found but four occupied nests. On each of these the mother bird would sit, whether incubating eggs or brooding young, until touched or at least until the fingers were within three or four inches of her. At a nest that held half-fledged young she would flit to the ground and creep along with wings drooped and tail outspread, returning to the nest as soon as the intruder retreated a bit. There was certainly no delirious excitement or "fit" in this bird's actions. But she was wild in comparison with another of her kind that I visited a number of times this spring in making a series of photographs. This bird would not leave her eggs until *pushed* off, and when I held my hand over the nest she straddled my fingers in trying to get back onto it; and yet, as devoid of fear as she seemed to be, when I did drive

her away from the nest she fluttered along on the ground in the manner of a crippled bird, her actions manifestly intended to induce me to follow. This bird certainly was not badly frightened, for within a few minutes she was back on her nest, accepting deerflies from my fingers and swallowing them with apparent relish.

The impression given by the Swainson's Warbler is that the injury-feigning is a deliberate ruse to lure an impostor or potential enemy away from its nest, but I believe it will be difficult for anyone to produce evidence proving conclusively that injury-feigning in nesting birds is anything other than the working of another instinct such as that which causes the newly matured bird in its first breeding year to build a nest much the same in size, form, situation, and materials as the one in which it was hatched. I am in hearty accord with Mr. Chisholm in suspecting scanty observation the grounds for W. H. Hudson's belief that "when a nesting bird flutters to the ground it does so from pain and is for the moment incapable of flight." A bird that has to be pushed off the nest and that a moment later, after feigning injury, returns and accepts food from a man's hand can hardly be said to have pretended injury "from pain." Nor do I believe its conduct could be attributed to fright.

The most consistent performer of pretended injury or helplessness among our eastern Florida Warblers is the Hooded. The sitting bird, whether male or female, almost invariably slips off the nest when it is approached and flutters along with the wings dragging on the ground and tail spread, brightly displaying the white in the the outer feathers. After the young have left the nest, but while they are still incapable of flight, I have had both parents and even a neighbor or two flutter around in this way.

Brief mention might be made of injury-feigning as observed in the other Warblers that breed here, if only for the sake of record.

In marked contrast with the shrub-nesting Hooded Warbler, the strictly arboreal Southern Parula rarely if ever practices the injury ruse upon being flushed from its nest. I have examined between twenty and twenty-five nests of this species and have never known the bird to feign injury when flushed, but this May while I tried to photograph some fledglings just out of the nest the mother bird carried on in the conventional Warbler fashion by drooping the wings and tail, gaping, and creeping and fluttering about.

On two or three occasions I have had Prothonotary Warblers feign injury when surprised at the nest, and the same applies to the Florida Yellowthroat, but in both these birds the performance was short-lived compared with that of the Pine or Hooded. A Florida Prairie Warbler with young on the point of leaving the nest, at Cedar Keys this May 10, went about feeding her offspring without apparent concern while I set up a camera a few feet away, but when I caused the young to leap from the overcrowded nest, the mother bird fluttered to the ground near my feet and groveled in the sand in what truly had the appearances of a delirious fit of anxiety for the safety of her young. This lasted but a moment, the bird resuming her occupation of feeding the fledglings as soon as they became quietly settled in their new surroundings.

Other Florida passerine birds that I have known to feign injury are the Florida Chickadee, Tufted Titmouse (both rarely), Southern Meadowlark (commonly), White-eyed Towhee (rarely), and Pine-woods Sparrow (frequently). Outside that order I have found the practice more or less prevalent with our breeding Ducks (the Florida Duck sharing with the Florida Nighthawk top honors for elaborate performance), the Bobwhite, the Limpkin and King Rail when they have young, the Wilson's Plover, Killdeer, Woodcock, Willet, Black-necked Stilt, Mourning Dove, Ground Dove, Yellow-billed Cuckoo, Chuck-will's-widow, and Nighthawk.

Hudson and Sherman (*The Auk*, July, 1936, p. 312) found that Mourning Doves at Clemson College in South Carolina feigned injury when young were in the nest, but not when flushed from eggs. My experience in Florida has been somewhat different. The antics of a bird trying to lure me away from her nest brought my attention to the first set of eggs I ever saw. Since that incident years ago I have seen Mourning Doves flush and fly directly away from young and eggs alike and others topple to the ground from either and carry on in the usual injury-feigning manner.

S. A. GRIMES

4661 Attleboro St.,  
Jacksonville, Fla.

Editor of 'The Auk':

The numerous discussions in your correspondence columns concerning "Injury feigning" by birds has interested me greatly. It is difficult for me to believe that anyone who has frequently watched such species as Killdeer and Piping Plover on their nesting grounds can feel that the "Injury feigning" bird is not consciously leading the intruder astray in calculated fashion. But I have been chiefly interested in the discussion as to whether or not passerine birds resorted to this deceit for I really can not understand how anyone who has studied birds in the out of doors can have escaped observing this quite frequent and conspicuous action. Why let us take one group of passerine birds such as the Warblers: In the last three months alone I have seen a Yellow Warbler, two Magnolia Warblers, three Black-throated Green Warblers, one Bay-breasted Warbler and one Redstart put on a fine demonstration of "Injury feigning."

To anyone who has photographed Warblers and has seen bird after bird present a very deliberate "injury feigning" exhibition and a few minutes later light on the intruder's hand to feed the young, the excessive fear contention seems to be conspicuously open to question. Of course we can not pigeon-hole the species that do resort to "injury feigning" for not all individuals of a species perform. I have taken photographs at some Magnolia Warbler's, Yellow Warbler's and Redstart's nests without witnessing any action that could be attributed to a deliberate misleading of the intruder. The "injury feigning" act, moreover, is certainly not characteristic of one sex. In some broods only the female will perform, in others only the male and still in others both birds of the disturbed pair.

The most beautiful performance I have ever seen was enacted by a male Black-throated Green Warbler which tumbled off the nesting spruce branch twenty-five feet from the ground and fell fluttering from one branch to the other until he reached the ground whereupon he dragged himself along with drooping wing. I sat amongst the spruce branches a few yards from the nest and saw this performance enacted time after time until *seemingly* the bird sensing it was having no effect ceased the "injury feigning" and came up amongst the spruce branches scolding and at times landing only a few feet from my face.

I do not see how we can expect birds to vary the "injury feigning" act a great deal. It has been essentially but not strictly the same in all passerine birds I have observed giving the performance. This male Black-throated Green Warbler went through approximately the same performance time after time but certainly never impressed me as following a strictly set pattern.

ALLAN D. CRUICKSHANK

Freeport, Long Island, New York.



Editor of 'The Auk':

In 'The Auk' for July, 1936 (Vol. LIII, p. 367) Mr. Lawrence B. Potter adds to the notes on injury-feigning among nesting birds by relating an experience with the Yellow Warbler (*Dendroica aestiva*).

This recalled a note in my journal under date of June 18, 1927, which reads, in part, as follows:

"Visited a nest of the Yellow Warbler and found the birds away, though the three eggs were warm . . . While I lingered there the male warbler appeared and began an interesting performance. With wings hanging loosely as if broken, he crawled about among the berry bushes uttering the usual "chip." When I went toward him he flew to a safe distance but, finding that I stayed near the nest he soon came back and went through his manoeuvres again. The simulation of injury, or sickness, was better, I thought, than with those birds that practice it consistently. Not only the drooping wings and tail but the way in which he climbed feebly about the bushes was admirably acted."

RUSSELL J. RUTTER

51 Belcourt Road,  
Toronto, Canada,  
September 2, 1936.

Editor of 'The Auk':

In the correspondence column of 'The Auk' there have been numerous references made to the origin, meaning, and description of injury-feigning among various bird species. From these accounts it is apparent that this practice is considered to be extremely uncommon among passerine birds. The late Harry Swarth, for example, stated that he could not recall ever having noted such an example among any of this large assemblage of avian creatures. In the July (1936) 'Auk,' F. H. May and Lawrence B. Potter relate a singular example of injury-feigning of a nesting Ovenbird and a Yellow Warbler.

It may be of interest to report an observation of this habit well developed in the Yellow Warbler on the lawn of the University at Provo, Utah, that was obviously giving her young their first lesson in flight. Two of this brood of five could fly but a few feet and even then with great difficulty. It seemed that unusual intelligence was being shown as the mother would frequently alight on the bark of the tree with an insect, holding the food only a foot or two above the developing young, and apparently encouraging them to come and get the morsel.

When I began to approach and was still a hundred feet away the mother frantically flew close to the ground zig-zagging back and forth ahead of the brood uttering danger or distress calls, seemingly encouraging the young to follow. As I approached still closer the mother-bird suddenly began to flutter as if unable to fly. She then developed the characteristic broken-leg and broken-wing ruse and kept some 20 to 30 feet ahead of me. After I had pursued her for perhaps 50 to 75 yards and it appeared that her young were at a safe distance, she flew in a large circle back to her brood. The injury-feigning seemed as expertly performed as if done by a Killdeer or other species commonly known to perform this act. I cannot say whether this incident was a deliberate attempt to lead the intruder away, or whether it was the result of the blind mixture of conflicting emotions of love for her brood and fear of man.

CLARENCE COTTAM

Biological Survey,  
Washington, D. C.

## Editor of 'The Auk':

The article and correspondence concerning injury feigning by nesting birds which have been appearing in 'The Auk' have been followed with much interest. I should like to add two recent experiences of mine.

On August 8, 1935, three very young Bobwhite chicks were found in a government Sparrow trap at my home banding station. As they were too small to wear the proper size band, I approached the trap which had been set near a wire fence, intending to release them. Immediately a banded male Bobwhite appeared near the trap. He gave a distress call, feigned injury, circled, and zigzagged as he dragged himself 100 feet across an open lawn, disappearing in a clump of shrubbery. In the meantime, the three young birds darted through the wire fence and away in the opposite direction, lost from view in the tall grass of adjoining vacant property.

On May 21, 1936, the nest of a Kentucky Warbler built on the ground in a wood near one of my sub-banding stations was visited. The brooding bird sat close over the four eggs for a moment as we stopped, but when she left, she dragged one wing as if hurt and ran along the ground away from the nest. On June 3d this nest was again visited in order to band the young. The injury feigning was again noted. She squealed as she hopped off dragging a wing while the two young were banded.

(MRS. F. C.) AMELIA R. LASKEY

## Editor of 'The Auk':

On two occasions I have observed the feigning of the broken-winged helplessness of Sparrows.

Some thirty years ago I found the nest of an Eastern Chipping Sparrow (*Spizella passerina passerina*), in a currant bush about two feet from the ground. Every time I approached the nest, the bird would fly off, run a short distance, then it feigned broken-winged helplessness for quite a distance, then rested on the broken wing for a while and then flew away. I approached the nest quite often just to see if its tactics would not be changed but every time the same performance.

On May 18, 1921, in crossing a close-cropped pasture lot two feet from a plowed plot, I flushed an Eastern Vesper Sparrow (*Pooecetes gramineus gramineus*). The soft-cushioned nest contained two small birds and an unincubated egg. The bird flew from the nest between my feet and feigned a broken wing for quite a distance and then flew away.

MYRA KATIE ROADS

463 Vine St.,  
Hillsboro, Ohio.

[As this discussion bids fair to fill an entire issue of 'The Auk' if continued, it seems useless to further multiply instances of Passerine birds "feigning injury." The fact that they do so has been abundantly proven, but practically no light has been shed upon the original problem—the nature and origin of the habit. Mere personal opinion does not get us anywhere and the interpretation of animal behavior is more complicated than many persons realize.—Ed.]

# OBITUARIES.

ENRIQUE LYNCH ARRIBALZAGA, a Corresponding Fellow of the American Ornithologists' Union since 1918, and a resident of the Chaco, Argentina, for many years, died at Resistencia, June 28, 1935 in his 79th year. He was born in Buenos Aires, August 26, 1856, and at the age of 22 began his scientific work which covered a broad field including entomology and ornithology.

Arribalzaga was First Subsecretary in the Ministerio de Agricultura and held memberships in the principal scientific societies of Argentina. He was a member of the Academy of Science of Buenos Aires and the Academy of Cordoba, a corresponding member of the Argentine Society of Natural History, honorary member of the Entomological Society of Argentina, and the Sociedad Ornitológica del Plata, and 'Academico Correspondiente' del Museo de la Plata. Shortly before his death he received the first award of the Bernardino Rivadavia Medal.

His principal publications in Entomology were devoted to Diptera and those in ornithology to the birds of Argentina. The first contributions on birds appeared in 1878, in three papers, in the first volume of 'La Naturalista Argentina,' and included brief notes on the fauna of Baradero, 'El siete-colores o siete-cuchillas (*Tanagra striata* Gm)' and 'sobre el *Podager nacunda* Vieillot.' His most extensive ornithological publication, apparently, was a critical review of the birds of Paraguay described by Bertoni which appeared in 1902. In the same year were published notes on two birds new to Argentina and the birds of Chubut collected or observed by Gerling. More recently he contributed papers to 'El Hornero' on the birds of the Chaco (1920) and on common names of 'las aves silvestres' of Argentina (1924-26). A more detailed notice with a portrait may be found in 'El Hornero,' vol. VI, pp. 120-121, Aug. 1935.—T. S. P.

LOUIS LAVAUDEN, a Corresponding Fellow of the American Ornithologists' Union since 1923, died at Anjou, Isère, France, Sept. 1, 1935, at the age of 54. He was born in Grenoble in the province of Dauphiné, southeastern France, June 19, 1881.

Educated as a forestry officer, he spent many years in Dauphiné and later in Africa. From 1914 to 1918 he served with distinction as an infantry officer and after the war saw service for ten years as a forestry officer in Tunis, and from 1928 to 1931 as Chief of the Forestry Service in Madagascar. During the last two years of his life he was detached from the Forestry Service and detailed to the Agricultural School in Paris where he lectured on practical and general zoology. During his service in Africa he had ample opportunities to become well acquainted with certain parts of the continent. In 1925 he crossed the Sahara Desert with one of the early motor expeditions from Tunis to Lake Chad and Dahomey, and, upon leaving his post in Madagascar, returned home through central Africa.

Lavauden was always interested in zoology, particularly in birds and mammals as well as in forestry, and improved his opportunities to study the fauna of the various localities where he was stationed. He was the author of several papers on the birds and mammals of North Africa and Madagascar and, in 1924, with Blanchet and Bédé issued a supplement to Whitaker's 'Birds of Tunisia.' His publications on the fauna of his native Alps and on French game have been characterized as excellent. He was a painstaking worker, a keen sportsman and possessed a good working knowledge of the literature of the fauna of the countries in which he worked. The main part of his collection was acquired by the Museum at Grenoble, France.—T. S. P.

**NOTES AND NEWS.**

We trust that every member of the Union, especially Associates who have not been in the habit of attending A. O. U. meetings, has arranged to be in Pittsburgh, October 19-22, 1936, to take part in the Fifty-fourth Stated Meeting. Everyone will be cordially welcome and will have a most enjoyable time.

Headquarters will be at the Hotel Schenley. Monday will be taken up with business meetings and the public sessions will open at the Carnegie Museum on Tuesday morning at 10 A. M. The annual dinner will be held at the hotel on Wednesday evening and there will be a field excursion to Pymatuning Lake on Friday. The intimate association with ornithologists from all parts of the country is one of the most attractive features of these gatherings and those who once form the habit of attending do not usually miss a meeting!



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